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THE
A.B.C. OF THOUGHT
BY THE
REV. W.G. DAVIES.

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45.

1881

THE
A, B, C, OF THOUGHT:
CONSCIOUSNESS
THE STANDARD OF TRUTH;
OR,
PEERINGS INTO THE LOGIC
OF
THE FUTURE.

BY THE
REV. W. G. DAVIES.



WILLIAMS AND NORGATE,
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HYPOTHESES NON FINGO.

"To prejudge other men's notions before we have looked into them, is not to show their darkness, but to put out our own eyes."—*Locke, 'The Conduct of the Understanding.'*



PREFACE.

THIS little work might have been made considerably larger, but some one has said, that a great book is a great evil, and the author judged, perhaps not very unwisely, that should his work prove unsuccessful, it is already too large, that should it be so fortunate as to meet with a favorable reception, it could easily be increased in size. In aiming at brevity, the author fears, however, that he has not always succeeded in setting forth his views with sufficient clearness. Still, he has reserved none of the vital and telling results of his investigation, and, although conscious of frequent failure, has made every effort to avoid adding to the difficulties of an abstruse subject by obscurity, eccentricity, or negligence in style. In this endeavour skilful aid, while inspecting the proofs, was afforded him by Dr. McCormac, author of the 'Aspirations from the Inner Life,' to whom, for many valuable hints and corrections, he tenders his most grateful acknowledgments.

The nucleus of the Third Part of this work appeared in the 'Psychological Journal' for the year 1858. The First and the Second Part appeared subsequently in the 'Journal of Mental Science.' The author's views as here presented have, however, been carefully reconsidered, and in consequence have, in sundry places, either undergone considerable expansion, else have received improvement or correction.

Although fully aware of the complaint that, on most

subjects, too many books are given to the world, the author yet dares to hope that in his book will be found, at least, that amount of originality which is usually allowed to be a sufficient pretext for publication. Had he thought otherwise—but that, perhaps, no author does—he certainly would not have taken so bold a step. The originality, however, to which allusion has been made, is simply that of one who lays a fresh stone in the vast structure which, from age to age, hundreds besides himself have been engaged in erecting. A poor deluded mortal must he be who, at this time of day, aspires to construct a system which shall be entirely his own, instead of being, as it undoubtedly would be, were it possessed of value, an outgrowth from antecedent discoveries. Wisely does the author of the ‘System of Logic’ say, in his preface to that famous work:—“In the existing state of the cultivation of the sciences, there would be a very strong presumption against any one who should imagine that he had effected a revolution in the theory of the investigation of truth, or added any fundamentally new process to the practice of it.”

Among the author’s motives for publishing, may be reckoned, a desire to submit his views to criticism, in order, in so far as they are true, that their development may be promoted, in so far as they are false, that their correction may be secured. Perhaps, too, he may be permitted to claim as a motive for bringing this little work before the public, that which, at intervals during the last fourteen years or more, has even been *forcing* it into existence, an all-absorbing passion, the better part of which he believes to be, a love of truth and progress.

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THE A, B, C, OF THOUGHT.

INTRODUCTION.

Nature of the Inquiry—Necessity for Logical Psychology—Objections—The Physiological Method—The Psychological Method—Vagueness of Psychological Descriptions, and how remedied.

Nature of the Inquiry.—That was an immortal thought of Descartes' which influenced him, when disquieted by uncertainty, to make a searching analysis of the very foundation of certitude. That foundation he clearly saw was consciousness. Consciousness, indeed, is the only standard of truth. Yet, since the Cartesian method, as culminating in German speculation, has led to results which can never be accepted by the country of Bacon and of Locke, it is evidently one thing to affirm that consciousness is the only basis of certitude, and quite another thing to show how it occupies that high position. Descartes thought that the clearness and the distinctness of ideas were the criteria of their truth. Leibnitz considered these tests imperfect, and proposed the law of identity and contradiction as the criterion in necessary truth, and the law of sufficient reason as the same in contingent truth. But these criteria, if tested by their fruit, have proved of little value as aids to

science; and certainly have not deterred men from indulging in the very wildest speculations. Now, in our examination of consciousness as the standard of truth, we have been led to the conclusion that it is by the observance of Bacon's method, rather than that of his great contemporary, that consciousness approves itself to be what the latter so clearly apprehended. The development of the inductive method in the light of Descartes' great principle forms, therefore, the main feature of the present inquiry. Placing ourselves on logic as a stand-point, we have endeavoured to take a comprehensive view of the domain around; and have not rested satisfied with merely examining mental processes in their results, but from logic have penetrated, wherever we could, into the psychology of logic. The consequence has been that the logic and the psychology have not always harmonised. We have had occasion, indeed, in several cases, to modify the ordinary doctrines of logical science, in such a manner as our psychological researches seemed to us to direct. And we cannot conceive, though the contrary opinion is held by high authorities, that the laws of thought can be fully determined otherwise than by following the method we have here observed, that is, tracing every mental process to its source, by a searching and exhaustive analysis. How far we have succeeded in carrying out this undertaking, it is not for us to decide. All we dare to hope is, that we have done enough to justify our plan of inquiry; and that we have contributed, in however trifling a degree, towards the advancement of that noblest of sciences, the science of mind, and especially that noblest portion of it which affords an answer to the long-asked question:—What is truth?

Necessity for Logical Psychology.—When uncertainty is the bane of a period, and philosophers have been led to seek the settlement of high and difficult problems, they have rarely been any length of time without being forced back upon the fundamental question so clearly stated by

Locke:—What is the human mind capable of knowing, and what not? We may either make faith usurp the scientific domain of reason, or make reason hazard disastrous flights into the sunny firmament of faith. We may, as mystics, arrogantly assume that the higher faculties have no limit to their capacity, and stand in need of no external aids—that, in their lofty flights, they leave psychological and logical laws in the clouds beneath. We may, with Descartes and the German philosophers, form an exaggerated estimate of the deductive method, and assume that human reason is not dependent for its data on observation and experiment. And when such courses have brought us into a dreamy region of contradiction and unnaturalness, we may draw back dismayed, and flee into the contrary extreme of cloistral gloom and credulity, and preach the theory of human incompetency. Or we may sceptically secure ourselves in the confined and dreary stronghold of pure sensationalism, and deny to the human mind half its powers, and those its best. But it is evident that we must look for something better than this oscillating procedure, for in proportion as we deviate from the straight road of progress, in that proportion we are not advancing, though we may be undergoing the necessary preparation for it. Alas! there are too many who are ready to urge, from having to witness so much diversity—such bold advances followed by such humiliating retreats—that the true and the false, the good and the evil, are, after all, very much matters of taste, that there is, indeed, no absolute truth, no fixed standard of morality.

Now, we have been led to believe, from a long-continued examination of the matter, that these constant surgings from over confident to over fearful and credulous, or to over contracted and sceptical tendencies, are only possible so long as a true system of logical psychology is yet undiscovered or unrecognised. Whatever contributes to this end, contributes also to the settlement of those great

questions, now so diversely viewed, entirely because the capacities of the human mind, on which their settlement depends, are not yet fully and clearly determined; and because those helps are not provided, without which, experience clearly testifies that we shall in vain endeavour to find egress from darkness and confusion, to light, beauty, order, and truth.

Objections answered.—Some men, however, evidently because they do not contemplate a stage of advancement which calls for a more extended method, regard a knowledge of logical science as of mere secondary importance, because, as they think, it can only describe mental processes which take place spontaneously, *i. e.*, without requiring to be known. They maintain that constant practice in reasoning is all that is required, and that little benefit is derivable from a study of the theory of reasoning. Now, there is just about the same amount of truth in this opinion, as there would be in that of a savage who pleaded against cultivating the ground, because it produced spontaneously all the sustenance that he required of it. If, on every subject, men do think aright spontaneously, *i. e.*, without the external aid of rules or models, why all the perplexity and error which we have indicated in the preceding paragraphs? If they think erroneously on many subjects, and those the most important, why defend such a procedure? The truth is, as we shall have to show more fully in another place, men reason correctly in a spontaneous manner in the elementary sciences, such as the mathematical, and in the ordinary affairs of life. When they approach higher and more complicated questions, when they enter those transition periods which travail to give birth to a new era, they require all the help they can obtain from a reflective knowledge of the mind's powers and laws.

The objection, therefore, to the utility of this science, founded on the analogy, say, between the possibility of attaining excellence in dancing, without the least acquaintance with the anatomy of the limbs, and the possibility

of becoming a fine reasoner, without being put to the disagreeableness of undergoing a course of Aldrich, presupposes that the two cases are precisely analogous. But are they analogous throughout, that is the question? The eagle and the lark may soar in company as far as the clouds, but there the eagle leaves the lark, and has to proceed on his sunward course all alone in his glory. Reasoning *is* analogous to dancing, in the point mentioned, as far as it develops itself *spontaneously*, but beyond this point the analogy ceases. Granted that Terpsichore has no occasion for being versed in bones, muscles, and ligaments, is it equally true that those who are disputing about the method of acquiring the higher truths—according to Mr. Morell, Positivists, Individualists, and Traditionalists—have no need of a further instalment towards the solution of Locke's great question, but will spontaneously crawl into the light?

As to the objection that minds differ so widely, and that consequently no two minds view the same thing in the same light—an objection which receives no small weight from the diversity of view which there is on so many subjects—if it be true, then there is an end of all science, that of the mind included; and we may at once adopt the lines of our poet laureate:—

“ Much less this dreamer, deaf and blind,
Named man, may hope some truth to find
That bears relation to the mind.
For every worm beneath the moon
Draws *different* threads, and late and soon
Spins, toiling out his own cocoon.”

No one will deny that minds differ widely from each other. But then they resemble each other widely too, and that—which is the all important point—in the most necessary and fundamental attributes. The more necessary and fundamental an attribute of mind, the more extensively it is possessed, and the more permanent it is. But the less

necessary and fundamental an attribute of mind, the more uncertain is its possession, and the more changeable its nature. To contend, that because minds differ, there can be no mental science, is on a par with maintaining, that because no two blades of variegated grass can be found to resemble each other perfectly, they have not the least resemblance to each other. This objection, then, we think is frivolous.

Another formidable objection which the psychologist has to encounter is, that which the traditionalist urges, namely, that the human mind has been so vitiated by the fall, that it is no longer trustworthy in its deliverances. And for the truth of this doctrine he appeals with evident success to history and present experience; for, indeed, "to err, is human," whether in conduct or in thought. Now, although this objection in its extreme form may be regarded as fully disposed of, yet we are inclined to attach considerable importance to it, because of the valuable lesson of humility and caution which it conveys. The minds of men are, indeed, far from perfect. As in their bodies we perceive many deformed, many with strong tendencies to disease, many unsymmetrically shaped; so in their minds, to a still greater extent, we detect many, and deplorable departures, both morally and intellectually, from a perfect standard. We have no sympathy with the extravagances of private or individual judgment, with that too popular theory of human thought which finds expression in the words:—one man's opinion is as good as another's. For this is a theory which we feel assured is false and mischievous, fostering conceit and pedantry, and very unfair to those who by talent and diligence merit the position of authorities in the subjects which they have studied. And yet, if we insist upon the thorough untrustworthiness of the human mind, no other theory is tenable: one man's opinion *is* as good as another's, and both are equally worthless. We must be careful, therefore, to give no more than its due weight to

the theological objection. The mind, it is too true, is not always conformable to its standard; but it is of that nature that it gradually reveals to one diligent searcher after another what that standard is. Though fallible, it is still trustworthy, in so far as the conditions of veracity have been discovered, and are obeyed. Even the theory of the traditionalist, if he expect it to be accepted, presupposes in the mind which he pronounces fallible, a power to *know as a certain truth* that such mind is liable to err, and therefore should be humble, and revere the constituted authority. This fundamental soundness of mind, this basis of the original structure, though sadly overlaid with weeds and rubbish, is still existent; indeed must be, else farewell to all truth, or even the believing reception of truth. The existence of every science proves what we here contend for to be correct, for either the human mind is truthful in certain of its revealings, else all science is a farce. It is, then, owing to the possible *infallibility* of the human mind that methods of inquiry, such as those of Bacon and of Descartes, are produced; and it is owing to its frequent *fallibility* that such methods are diligently sought for as aids to the discovery of truth, and as preservatives against error. "Neither the hand without instruments, nor the unassisted understanding can do much; they both require helps to fit them for business; and, as instruments of the hand, either serve to excite motion or direct it; so the instruments of the mind either suggest to, or guard and preserve the understanding."*

The Physiological Method.—Since the introduction of phrenology, great stress has been laid by physiologists on the opinion, that no method of investigating mental phenomena is calculated to be successful, but theirs. Like the phrenologists, they maintain that theirs is the only correct way of exploring the world of mind. In this they exhibit that

* Bacon, "Aphorism 2."

one-sidedness and want of intellectual breadth, together with that exaggerated estimate of a half-system which is manifested on the opposite side by the pure idealists. As well may the Great Eastern be turned into a land carriage, or a railway train attempt to navigate the ocean, as for physiology to invade the province of psychology, or the converse. The objects which they embrace are quite distinct from each other. Those which psychology embraces are internal, and are only to be known by reflection, and by inward transitive knowing. Those which physiology embraces are external in character, and are only to be known by outward transitive knowing. Psychology and physiology differ, therefore, from each other, both as to the objects they include, and as to the manner in which those objects are apprehended. Neither of them can act as a substitute for, or supersede the other. We believe the truth to be, therefore, that no method can succeed in establishing mental science on a perennial foundation which does not acknowledge the physiological to be a necessary and important half. Indeed, physiology appears to us to throw great light upon the science of mind. Such a science in its integrity, it will be impossible to obtain, without the co-operation of those who devote themselves to the study of the nervous system. But we must be careful to distinguish between what nervous physiology does for mental science, and what it does not. Its office, it is superfluous to state, is to assign to every mental function its organ; to describe each organ, and the laws which affect it; to analyse the phenomena of life as preceding thought; to determine the relations which subsist between life and consciousness, and between these and their corporeal conditions; and facts of that nature. But it cannot afford us a science of the functions. The function of the stomach, for example, stands in a very different category from that of any mental function. The *stomach* is not endowed with consciousness. The *mind*, while conscious of other objects, is self-conscious, is the

observer, or is competent, at least, to be the observer, of its own operations. This is the fact on which mental philosophers lay such emphasis when they declare, that mental phenomena are not to be sought in the same manner as physical phenomena. In the one case, the mind examines itself. In the other case, it examines *something else*; and this last is its procedure when following the physiological method.

As to the method of observation on the actions of mankind for the ascertainment of mental laws, it is highly useful as far as it goes, but is not, by itself, sufficiently searching for the purpose of constructing a science of mind. Actions declare that such and such thoughts are in the mind of the actor. What thoughts? The thoughts that are in your own mind. Of what character are they? Consult the actions, they are as unintelligible as a book to an infant, unless you possess the clue to them in yourself. Well, you think, perhaps, that you do possess it. Of what character, then, are the thoughts? Of such and such a character. But be more minute, give an exhaustive analysis, disclose the science of them? You cannot: you find that external observation cannot aid you; and that if you would know the innermost structure of thought, you must examine long and searchingly the only specimen of which you possess a direct knowledge, and that is your own consciousness; for other men's thoughts you only know indirectly. In short, you know nothing whatever of another man's consciousness, except what you know of it, through the medium of your own.

But here it becomes necessary to concede, that by the method of observation exclusively, it is possible to discover that a man has certain mental phenomena in excess of your own, or in a less degree than your own, or forming combinations different from those which yours usually do, and facts of that character. Such a method is indispensable when your object is, by the comparison of various minds,

to ascertain how far they agree with, and differ from, each other; how men are most likely to act in **certain** circumstances; how persons of different dispositions **are to** be dealt with, and most easily influenced and **managed**. And the man proficient in such knowledge is said to be well versed in human nature. But it is evident, that the *basis* of mental science must be laid by a purely psychological method; to which the method of observation bears about the same relation as history does to the philosophy of history, or sociology.

By external observation, we come to know the uniformities of human conduct. By reflection on our own consciousness, and by the study of psychology proper, we become able to account for those uniformities, or become possessed of a knowledge of those laws from which we could *deduce* how men in certain circumstances would be most likely to act, and, indeed, how men, in every circumstance, ought to act. External observation can gather from past uniformities what uniformities are *likely to* occur in future. Psychology can deduce from the laws of the mind how coming generations can improve on the observances of the past, in short, can *anticipate* the approaching destiny of our race. The mere observer is apt to maintain that nothing *is*, or *is to come*, but that which *has* been. The psychologist cannot avoid inferring, that the past and present experience of mankind, in relation to future experience, is but as the boy who is to be father of the man.

The Psychological Method.—In order to obtain a clear idea of this method let it be understood that consciousness is divided into inward consciousness and outward consciousness, according as its objects are, 1, internal, and not cognised by the senses; or 2, external, and cognised by the latter. Psychology embraces all that portion of the man which is revealed to inward consciousness, namely, 1, consciousness itself; 2, emotions and desires; 3, corporeal sensations. Consciousness knows

itself by reflection. It knows the mind as feeling and desiring as an object distinct from itself, and therefore not by reflection, but by inward transitive knowing. It knows corporeal sensations, in the same way. If, therefore, we would obtain a scientific analysis of the mind, and of that portion of life which is revealed to inward consciousness, no other method than the psychological is possible.

Psychology is divided into two branches, namely, the Psychology of consciousness, and the Psychology of emotion. The first branch is subdivided into logical Psychology, that of which this inquiry treats, and the Psychology of the secondary intellectual powers, such as memory, association, imagination, and belief. The second branch is subdivided into the Psychology of the mental emotions and desires, and the Psychology of the corporeal sensations.

All psychological truths are ascertained by observation. Observation in the Psychology of consciousness is reflection, that is, the knowing powers examining themselves. Observation in the Psychology of emotion is inward transitive knowing, that is, consciousness knowing an object which is distinct from itself. In physiology, on the other hand, observation is outward transitive knowing. When consciousness is said to know itself, the verb *to know* is used as a reflective verb; but when it is said to know an object distinct from itself, the verb *to know* is used as a transitive verb, hence the expression, transitive knowing.

The aim of the logical psychologist is to discover those necessary and universal truths which constitute the science of sciences; in short, the laws of consciousness as the standard of truth. Well, universal truths, you exclaim, demand for their establishment the very widest induction, consequently, if you limit your observation to your own thoughts, you cannot possibly procure the results for which you are seeking.

Now, whether such truths can be established by a reflective examination of a single mind, or whether they involve

a minute inspection of all history, and a wide observation of living characters, this is the question. Its answer forms the cardinal principle of inductive logic. Can we, then, from reflection on our own mental phenomena—with the aid, of course, of the light afforded by the researches of philosophers in the same field—get possession of those universal truths which constitute a science of the mind's operations? As an attempt to answer this all-important question—a question relating to scientific truth to whatever subject pertaining—we offer the following contributions, which will thus be seen to be an analysis of the intellectual faculties, with a view to determine the true method of scientific inquiry.

We here gratefully acknowledge our obligations to the labours of others in the field of psychology, more especially to the writings of the late Sir Wm. Hamilton, and those of Mr. J. S. Mill; writings, of a very opposite character, it is true, yet on that account the more edifying. But we should have done nothing without our own consciousness. That is our highest authority. And the study of the facts of consciousness by a reflective, the only possible, examination of them, this is the task we are endeavouring to accomplish. And we feel convinced that a thorough separation of the two great departments—the physiological and the psychological—is absolutely demanded in the cultivation of a science, in which all we can hope to see accomplished by a mind short of super-excellence, is, that it should succeed in shedding some degree of light on one only of those departments. For let some investigators think what they will, the relation which these bear to each other cannot be rightly ascertained till we know clearly what they are in themselves. We cannot know that John is taller than James unless we have an adequate view or knowledge of both. In the course of these investigations, then, we shall carefully abstain from trespassing on a department in which all our knowledge is necessarily taken on trust. But while thus confining our-

selves to our own field of inquiry, we beg leave to intimate, in deference to the valuable labours of our fellow-workers in the other field, that we have sought from their discoveries what light we could obtain from them in the way of suggestion, and of checking our conclusions in our strictly psychological search.

Vagueness of Psychological Descriptions, and how remedied.—There are many who regard the teachings of mental philosophers as extremely vague. Intellectual processes, as usually described, seem to the mind long trained in the school of physical philosophy to be almost unknowable. There cannot be a doubt that there are some men whose mental constitution, partly from nature and partly from culture, is of so concrete a character that they encounter considerable difficulty in realising the facts which the internal world of mind exhibits to persons of a more reflective and abstract turn. And we are inclined to concede to the concrete philosophers, that psychological doctrines have been exhibited to them in too general terms—in a manner very dissimilar perhaps to what they have been accustomed in their respective sciences—and thus have come to them, even where there was little diversity of view among such doctrines to obstruct their acceptance, in a very airy and spectral shape. And we feel convinced, that had mental philosophers been able to divide their general views into more particular and comprehensive parts, many points of disagreement would have been cleared up in the process, and many would be found to accept their teaching who now will not comprehend it, or doubt its truth. Now, whatever system of mental science the future has in store for us, we believe it must be one which will enumerate and describe each distinct faculty contained under the general terms hitherto used by psychologists. For instance, besides a general description of the human intellect, we must have analysed for us minutely and fully the various faculties which such a term denotes. With all parts of the mind,

an effort must be made to descend from the generals so much in vogue, to the particulars contained in them.

Since we have lamented the necessity which compelled mental philosophers to rest in the cloudy region of general description, we must expect to be asked, what we have done to redeem our observations from a similar liability, especially since we have emphatically declined the physiologist's task of assigning to each faculty its organ, which would be giving it a local habitation, as well as a name, and would render it, some may think, a more appreciable fact to minds of a concrete conformation. But it is not at all likely that this result would follow; for it happens, that between thought and its organic condition there is nothing in common which would help you to understand the one through the medium of the other. The mind can know itself only, by contemplating itself *in action*. It may, in a dissecting-room, ponder over the structure of the brain and nerves, from which the soul has fled, but it discovers in them nothing approaching to the nature of consciousness. It beholds merely its organic accompaniment, which is no more like mind, than pain is like the point of the needle which inflicts it. We then study consciousness, as it only admits of being studied, in itself. And we believe that we are enabled to give it a distinct and specific character, chiefly by exhibiting it in the *forms* in which it expresses itself in articulate language. Intellectual processes, when their spiritual essence is embodied in the forms in which they find their legitimate expression, will be found to be far more distinctive facts than they have hitherto seemed to those, whose minds demand a material symbol, to enable them to arise from the engrossing world of sense to a clear apprehension of the abstract, the ideal, and the remote.

PART I.

OF CONSCIOUSNESS.

“To the whole series of states of the mind, whatever the individual momentary successive states may be, I give the name of our consciousness—using that term, not to express any new state additional to the whole series . . . but merely as a short mode of expressing the wide variety of our feelings; in the same manner as I use any other generic word for expressing briefly the individual varieties comprehended under it.”—*Brown's Lectures*, p. 67.

CHAPTER I.

CONSCIOUSNESS ANALYSED.

What is Consciousness?—The Originating Faculties—Reflection—The Conditions essential to the Originating Powers in common with the other acts of Consciousness—I. The Subject or Ego—II. An Object—III. Time—IV. Attention—V. An Asserting Force—VI. Form.

What is Consciousness?—Sir William Hamilton says that “consciousness comprehends every cognitive act, in other words, what we are not conscious of, that we do not know.” In every human mind there is an unceasing flow of thoughts, emotions, and desires. But throughout these changes there is one element which is ever present. That element is consciousness. Do we desire? We must know it, else we do not desire. Do we feel? We must know it, else we are in a state of apathy. Knowing, consciousness, therefore, is the common or generic attribute of every mental manifestation. It is that in which all intellectual operations resemble each other. It is the *summum genus* which includes every cognitive act.

It is scarcely correct to speak of feelings, sensations, sensibilities, sentiments, desires, passions, excitements, or whatever may come under the class emotion, as states of consciousness. Consciousness is merely their common element, that in which they resemble each other. Now, abstract the common element, consciousness, from such phenomena, and what remains is their characteristic, that

which forms the object of consciousness, namely, *that* of which we are conscious when we feel, desire, and so forth. In the Psychology of consciousness, it is desirable to adhere closely to consciousness as distinguished from its objects, by eschewing as much as possible any consideration of the latter, even although these be mental, and therefore within the province of psychology. In other words, we must keep the Psychology of consciousness and the Psychology of emotion apart from each other.

The Originating Powers.—Among cognitive powers, there are three which may be called originating, because all knowledge takes its commencement from one or the other of them. These are Perception, Conception, and Reason. Other operations, *such as* Memory, Association, Abstraction, Imagination, and Belief, presuppose these, and originate no ideas.

Reflection is the name of no separate Faculty, but merely expresses the act by which the intellectual powers become cognizant of their own operations.

In their direct operation, the originating powers are the origin of all knowledge of objects, that is, whatever we are conscious of. In their reflex operation, they are the origin of all knowledge of their own direct or transitive agencies.

This, being an inquiry into the structure of the mind from the logical point of view, is chiefly concerned with the originating faculties. The remaining mental operations will be considered only so far as the main object of this inquiry renders such a step absolutely necessary. We shall proceed, then, in the first place to enumerate—

THE CONDITIONS ESSENTIAL TO THE ORIGINATING POWERS IN COMMON WITH OTHER ACTS OF CONSCIOUSNESS.

I. *The Subject or Ego.*—In a cognitive operation, we are not merely conscious of an object, but we are also aware that

the subject or *ego* is conscious of the object. We are constantly realising our individuality in every manifestation of consciousness, and without this constant possession of our subjectivity, our thoughts—if it were possible in such a case to have any—would be as much isolated from each other, as if each of them belonged to a separate person. But how do we realise our individuality? How are ever-changing states of mind and body regarded as pertaining to one unchanging person? We can merely suggest an answer to this question.

There is an act of perception which, from the highly important office which it holds among intellectual powers, claims more than common notice. Its importance arises, not from its dignity, but from its fundamental and abiding character, as forming the basis of every other cognitive act. If it fail, the whole mind must fail with it. This elementary perception seems to be that of ourselves as possessed of extended animation. Its two elements ($c+o$)* appear to be, first, The consciousness; secondly, Of extended life. The most striking feature of this perception is, that it is permanent during our waking moments, always a perception, *c* in conjunction with *o*. Other psychical manifestations are intermittent. But so long as we experience any of them, so also must we experience this. And while internal observation leads us to this result, reason also concludes, that since all sensations, excepting that which is the object of this perception, since all appetites and emotions; and, since all mental operations, come and go with more or less frequency, they must, of necessity, involve a sensation which is abiding, within the boundaries of which they must need have their habitation. This sensation forms the *o* element of the fundamental perception. Without this fundamental perception, all other acts of consciousness, on the supposition of their existence being possible, would be utterly isolated

* See p. 27.

from each other. It is, therefore, the basis of our personality, and the bond which unites our other powers into the whole which forms the subject or *ego*. By personality we mean ourselves as realised in thought. We fully recognise the fact that a human being has an existence which in the Order of Nature is logically prior to consciousness; and that in the embryo state, he had an existence prior to consciousness in time also. But in the Order of Knowledge—that order in which man exists to himself—consciousness is prior to existence. *Cogito ergo sum*. Because I am conscious, therefore it is, that I *know* that I am, that I exist to myself.

Our personality—such is the evidence we possess—is a whole, made up of many parts, some co-ordinate, and some successive. But like a piece of music written in one key, this whole combines unity with diversity. The element which forms the bond of union, is the ever-fixed perception which we are examining. Upon this, as it were, or presupposing it, we have other, more or less variable psychical attributes; those which are nearest the base being less subject to change than those which are considerably removed from it. It is a law of nature that the most fundamental is the most abiding, the most simple, the most general; but that the superincumbent is ever tending to greater variableness and complexity, and less generality.

It may here be alluded to incidentally, so essential is it to establish the point under discussion, that comparative physiology fully confirms the view here taken. It teaches that the principle of unity, or personality in man, is of the same class, as that, which, in animals, reaches very low down in the kingdom to which they belong, enabling each of them to realise its individual existence. Since, therefore, personality, or, if that term be thought too dignified, the realisation of individual existence in consciousness is, to a certain extent, similar in all the animated occupants of the

earth, it becomes manifest that we must look for its characteristic, *not* in that in which man transcends the rest of the animated creation; not even in that in which one animal rises into a higher sphere than another, but exclusively in that in which the meanest, as well as the greatest, of mortal beings, resemble each other. And what is this, but the fundamental perception which has here engaged our attention?

II. *An Object*.—There can be no consciousness without something of which we are conscious, namely, an object. The attempt to think without thinking of something, is to render thought impossible. A cognition, as we shall see further on, involves the prior existence of an object in the Order of Existence; but an object involves the prior existence of a cognition in the Order of Knowledge.

III. *Time*.—Consciousness, when once awakened, must have some degree of permanence. Thought is so inconceivably rapid, that it can only be realised in connexion with the impression which it leaves behind. This permanence of consciousness after its first flash into existence is memory.

A cognitive act, therefore, without memory to retain it, would, from its velocity, be scarcely perceptible, no better indeed than a rapid succession of minute unconnected points, instead of an abiding breadth of surface.

But consciousness has no past. Its time is a perpetual *now*. The past is thought of by means of a rapid and unbroken flow of ever-present consciousness. The future has no existence, save in imagination, which, out of past experience, pictures a time to come.

The peculiarity of time in relation to consciousness is, that it is the only object which is cognized as being at once, both a constituent element of consciousness, and of all being. Consciousness, like everything else, exists only in so far as

it exists *in* time. Space, in contrast to time, is not a constituent element of consciousness, but an object distinct from it, and the condition of all material existence.

IV. *Attention*.—An act of thought, although it may exist in a rudimentary or *passive state*, is not consummated, until the cognitive power is concentrated on as much of an object, as the mind at one time can well embrace. To what extent this power is possessed will have to be determined when we come to treat of the Proposition or asserting sentence. This concentration of the mental power upon an object by an act of the will, or perhaps some strong impulse, is attention.

We may observe, by way of elucidating this point, that it is said, we sometimes have a sensation, without being aware of it, as when a clock strikes in a room in which we are sitting, without our observing that it has struck. The explanation of this fact seems to be this:—The usual effect caused by the vibrating medium upon the organ of hearing is produced, but fails to awaken consciousness, because that has its force so much concentrated in a different quarter, that it leaves the organ of hearing in a state analogous to sleep.

But there is another explanation. The mind is capable of various degrees of exertion. It may regard an object carefully and minutely; or it may scarcely notice it. It may be conscious of the striking of the clock, but does not heed it.

In the first instance, the mind concentrates the cognitive power on each point of the object in turn. In the second instance, though conscious of the existence of the object, it does not attend to any part of it in particular. There is then a marked distinction between consciousness as exerted, and as not exerted, between the *attentive* and the *inattentive* mood of mind. We dwell upon this obvious fact, in order to prepare the way for stating, that these two

states of mind coexist. Although we can only well *attend* to one part or one quality of an object at a time, we are, nevertheless, *inattentively* conscious of its remaining parts or qualities. Or, take what we may call the field of thought—although we can only attend to a limited portion of it at once, does it not seem, that we are not wholly unconscious of the contiguous points; and that when we attend to them in their turn, it is because we were previously dimly cognizant of them? Every thought has other thoughts linked to it. When we bend the attention, therefore, to a particular idea, we may have at the same time a faint consciousness of the ideas with which it is associated. And the ease and rapidity with which we pass from one thought to another is, perhaps, sufficiently accounted for by saying, that we naturally pass from that portion of the field of thought to which the attention, at any one moment, is limited, to some other portion of it of which we were previously passively cognizant. Thoughts certainly crowd upon the mind at times faster than we can find the power to attend to them. The practised speaker, while his attention is engaged with the statement he is on the point of uttering, has nevertheless before his mind the thoughts which are immediately to follow. It is in sight that this fact is so clearly manifest, in which we only attend to what is in the axis of the eye, but see more or less imperfectly the whole field of vision.

Although various faculties of the mind act simultaneously, they do not usually attend to their respective objects at the same moment. We may be so engrossed with one deep thought, as to be scarcely alive to the world around us. While the eye is attracted by fine colours and forms, the ear, perhaps, is all but deaf to sounds. While the hand is delighted with the smoothness of the mole's skin, the eye, perhaps, is gazing vacantly into space. Thus it may be when we hear the clock striking, while that event fails to attract attention from something

else in which the mind is lost, we may hear it, but only passively, or in an indiscriminating manner. We hope we have now elucidated our meaning when we asserted, that an act of consciousness, although it may exist in a rudimentary or passive state, is not consummated till it becomes an act of attention.

V. *An Asserting Force*.—Consciousness when apprehending an object asserts, proclaims, avers, the existence of that object as possessed of such and such attributes; and that with such force that it cannot avoid doing so. Reason, however, raises questions as to the real nature of the *non ego*, namely, as to whether it is in reality what it invariably appears to be. Thus, the rainbow appears to be external to us, and can only be realised in a *positive* sense, as it thus appears. But it is *inferred*, nevertheless, to be a phenomenon of a subjective character. Here the intuitive assurance and the inference do not harmonise, and cannot be brought to do so. Intuitive consciousness or Perception *must* continue to aver, after the inference is obtained, as it did before that event, that the rainbow is a distant object much greater in circumference than that of the retina multiplied, who shall say how many times? Reason, on the other hand, *must* as confidently pronounce that the rainbow, as we know it, has, independently of us, no existence.

But in this want of harmony between Perception and Reason, arising from the impossibility of either abating the asserting force of the other, we see nothing to deplore. Suppose for instance—while we take it for granted that we could not be made aware of the existence of extended objects at a distance, but by means of some such mechanism as the eye—that, before we had acquired any scientific knowledge of vision, we felt confident, that a visible object was external; but that after we had done so, our assurance vanished, and intuition from that moment regarded what we

saw as having no further connexion with the external world? Or, suppose that reason yielded to the asserting force of our intuitive assurance, and might just as well be non-existent? Can you conceive a state of things to which the poet's words would apply with greater force and truth:—"Where ignorance is bliss, 'tis folly to be wise"? To be possessed of an organ which secures for us a fellowship with the world without, through the medium of a world within, which cannot be *positively* realised as internal, is indeed a contrivance admirable in the extreme, and exhibiting the wisdom of the great Creator as much as anything within this admirable Cosmos.

It is here necessary to explain, that it is only when asserting the objective existence of secondary qualities that Perception wages an amicable strife with Reason. When asserting the objective existence of primary qualities, Perception is at one with its superior. And this is one of the strongest proofs obtainable of the real existence of the external world. While sight, hearing, smell, and taste, therefore, are proved to be subjective—rather quasi-objective—faculties, that is, out-ward practically, but not speculatively: touch and muscular discrimination are out-ward faculties both practically and speculatively. Between their reports and that of Reason, sitting in judgment upon them, there is perfect harmony.

VI. *Form*.—Every cognitive act has a special form in which it expresses itself in speech. Form is that attribute of expressed thought which remains when the matter of a proposition is wholly abstracted, and symbols substituted for it. As we shall have to devote the whole of the second part of this inquiry to the examination of the forms of Perception and Conception, and a great portion of the third part to an examination of the forms of Reason, we shall here conclude our remarks on this head, remarking that the remaining conditions of consciousness are to be treated of

in connexion with Form, and in the next chapter proceed to notice a very important condition peculiar to Perception, and that which renders it most strikingly distinct from every other kind of consciousness.

We must beg leave to call this condition—*bi-unity*, that being the term which most forcibly expresses the attribute which now calls for attention.

CHAPTER II.

THE BI-UNITY OF PERCEPTION.

PERCEPTION EXAMINED—The Two Elements in Sensible Perception are quite distinct—Observations—Relation of the Object to the Cognitive Element in Perception—Relation of the Cognitive Element to the Object in Perception.

PERCEPTION EXAMINED.—Perception is composed of two distinct elements, namely, consciousness and an object, C + O. Abstract the object, and Perception is destroyed as effectually as if you had abstracted the consciousness. The O element is indispensable to the bi-une fact, C + O.

We use the term object in the most extensive sense, namely, as equivalent to whatever we can be conscious of. We are conscious of two main classes of objects, namely, subjective, that which belongs to *self*; and objective, that which does not belong to *self*. Subjective or self-objects comprise sensibilities or emotions, and muscular actions.* Objective or

* We fail to discover in our own consciousness, that muscular action is made known to us as a *sensation* or emotion. We are cognizant of it as an unemotional object, *sui generis*, which cannot be expressed in simpler terms than muscular action or exertion, because not resolvable into anything else.

The fact that bodily exertion is delightful when muscular energy is in a state of high pressure, but painful when the same energy has become very weak, does not constitute it an object of the sensitive kind, more than the zest and eagerness with which the intellectual faculties work when fresh, and the difficulty and reluctance with which they

not-self objects are divisible into objective, and *quasi-objective*, or those which are external, and those which *seem* to be external.

Of course, the idealists, whether sensational or rational, will object to this division, and maintain that *for us* nothing is external, but only appears to be. We shall endeavour to show by and by, that what appears to *intuitive consciousness* to be external, but is pronounced by *Reason* to be internal, must be called *quasi-objective*. But that what appears to *intuitive consciousness* to be external, and is pronounced by *Reason* to be in reality what it is apparently, *must* be called—if we are to distinguish in language what is clearly distinct in fact—objective or external.

But we derive another large and highly important class of objects from the reflex activity of the mind. And it seems, which is a fact demanding great attention, that before the mind has by a reflective procedure scrutinised its own processes, it knows nothing whatever of these processes, more than is obtrusively patent in their results. And, though philosophers for ages have assiduously sought to discover what it is that really takes place in spontaneous thought, the secret as yet is but partly stolen from the mind.

It is in the invariable presence of the object in Perception, and its frequent absence from other acts of consciousness, its

work when jaded, places them in the category of the mental emotions or sentiments. But we are well aware how ambiguous and misleading the term sensation is; and that some persons will insist that the reports of the senses are sensations. But they will insist also that pain and pleasure are sensations, that the disgust attending some tastes and scents, and the pleasure attending others are sensations, so that, in fact, they make the term sensation perform a variety of offices. Sometimes it has to stand for perception, sometimes for a phenomenon that has no emotion or feeling in its nature, sometimes for a phenomenon which is exclusively of that character. The reader will not be surprised then if we declare that we have almost as great a horror of the word sensation as Reid had of the word idea.

place being fully supplied by memory, or the C element of Perception, that we behold the wide difference which there is between it and them; and that on which the universal assurance is grounded, that what we perceive, is different from what we remember or imagine.

The distinction between Perception and Memory, for example, if the above be a true description, is easily explained. Memory is the persistence of the C element after the O element has disappeared. Every recollected object is simply C. In no instance are we able by any amount of effort to make a recollection, or an imagination, seem a perception or C+O.*

Yet, it is much easier to call up vivid thoughts of some objects than of others. Visible objects, it has been said, possess this aptitude in a high degree. But to us by far the easiest objects to realise in thought, are spoken words. Corresponding to the actual utterance of words, there is simply an ideal utterance of them. It is only the merest novice in reading who has to whisper his words when he does not desire to read audibly. Almost every educated person peruses a page by a mental articulation of the words. And thus it is that all men, deaf mutes excepted, carry on a train of thought. They mentally speak their thoughts. Now, even these objects, though more easily thought of than any others, are far from being in their mental, what they are in their actual character. Who will say that a word spoken in thought is a faint attempt at speaking it in reality? Of this we are positive, there is no audible sound, and no vibration of the articulating organs to cause such sound. The audible word is a bi-une fact: the other is not, and cannot by any amount of effort be made such, without losing its distinctive character, and becoming bi-une.

The objects most readily and vividly thought of are the

* See Lewes' 'Biographical History,' Library Edition, p. 449, and Bain, 'On the Senses and the Intellect,' p. 337.

unemotional, the objective, *quasi-objective* and muscular actions *e. g.* the muscular actions of the articulating organs. The objects least apt to be realised in thought are the emotional.

There is, however, a tendency in the mere thought of some objects to excite a mental emotion or desire. We consequently possess the power of recalling such an emotion by summoning into existence the thought of that which originally aroused it. In this case, it is not the C element of a past perception of feeling which is called up, but a perception itself; that is, 1, the Consciousness, 2, Of an emotion or object. From this fact we learn that we can scarcely be said to remember a past emotional state. But as long as we can recollect that which originally kindled it, we possess the power of repeating such a mental manifestation, not, indeed, with its first intensity, but each time perhaps, with abating force. Corporeal sensations, with some exceptions, are not thus at command. Who can recall toothache or gout by thinking of the circumstances which attended his last attack of it? And who would if he could?

The Two Elements in Sensible Perception are quite distinct.—It is important to observe that in sensible or external Perception, the cognitive element is not a part of the object, nor that a part of the cognitive element. The cognition is not C + O, and the object, especially, is not a mere modification of C, or a combination of C with O. The cognitive element knows itself, as well as the object, and, consequently, is fully competent to declare which is which. It, therefore, confidently asserts that the fact of *knowing* the object does not constitute it either in whole or in part. The object is not a modification of consciousness, nor is it a combination of consciousness and something else. It is a really distinct second element, essential to the very existence of Perception. This is, beyond doubt, what consciousness most emphatically avers. Compare an act of outward perception with an act of memory or imagination, and in the

difference which you detect between them, how can you possibly avoid being made aware of the fact here insisted upon? Consciousness declares, then, that there is a *real*, and not an *apparent* distinction between the C and the O elements in Perception. In some internal perceptions, as we shall have to show further on, the object and cognition are confused.

Observations.—The object in Perception is known immediately in itself as a present object, and is the only object which exists as present to us. The objects of Conception and Reason are those exclusively which are present to us in Perception, for this last being the gate of consciousness, whatever knowledge resides in the mind must have entered through this gate.

Being known immediately, the object is known as it *is*. But if you say it is not known as it is, but as it *is not*, then the *only* object for us is that which you know as something that the first *is not*; which is, therefore, *for us*, no object at all.

Every object must, in the first place, be known immediately. If we know an object mediately, it must be through the resemblance which it bears to something which is already known. Thus according to the "ideal" or, as Sir William Hamilton has named it, the Representationist theory of external perception, the mind possesses an *immediate* knowledge of the "idea" only, but can have no knowledge whatever of the external object, except in so far as the "idea" is a copy of it. This, however, we have no possible means of ascertaining, as the sceptical philosophers have triumphantly proved. But, fortunately, we do not know an external object through the medium of anything representing it. We know it *immediately in itself as a present object, and as of a nature perfectly separate from the consciousness which apprehends its existence.*

Relation of the Object to the Cognitive Element of Perception.—It is to be noticed that the cognitive element

reveals the existence of the object. *For us*, therefore, the object presupposes the cognition, Being presupposes Knowing. Consciousness, then, is the *cause* of the existence of objects *ad nos*. Or to state the fact still more definitely—An object exists *for us*, as present, in the bi-une fact C + O only, and then exclusively through the intervention of the C element, or in any sense, present or not present, only so far as it is known or thought of. Thus, if we contemplate the world as existing independently of us, we are all the while regarding our own thoughts, which of course cannot exist out of the mind which conceives them. Being *for us* is either invariably linked to Knowing, or is Knowing alone. In Perception it is Being + Knowing. In memory, imagination, &c., it is simply Knowing. Now, the question suggested by this doctrine is this: Is consciousness competent to declare the independent reality of external objects? 1st, Is the object *really* non-egoistical in Perception; 2ndly, Can it exist out of Perception, or as O minus C? The Idealist replies that it cannot.

Now, we think that if the question be put at all, it ought to be more broadly stated. Instead of demanding whether external phenomena have a real and independent existence, it should be inquired, whether *any* thing which consciousness reveals to us have a reality. We know that *subjective* phenomena have been pronounced far above the reach of scepticism; consequently, the question as we put it will be deemed preposterously wide. Whether it be so or not, the following criticism will, perhaps, decide. We strongly suspect that this is the only complete way of stating it.

All Being, including subjective being, yea, and even that of consciousness itself, only exists *for us* in so far as consciousness, when asserting its existence, asserts truly. Push your inquiries to the very furthest point to which they can go, and you come to an asserting power, as the basis of all existence *ad nos*; yea, as the basis of its own existence.

Now, if this asserting power be mendacious, a dark for-

bidding nihilism is the fearful result. If, as is usually taught, it be mendacious objectively, but not subjectively, a scarcely less forbidding idealism is the consequence. But, if this ultimate principle be veracious, objectively as well as subjectively, the result is, what the common sense of mankind has, with certain admirable exceptions, led us to expect. Is consciousness veracious? We hope to be able to demonstrate in the proper place that it is. But this is the dilemma: either it is *objectively* veracious, or we are *altogether* "the dupes of a perfidious Creator."

Nihilism, or Realism—choose between them. You have no other choice. For convict the asserting principle of objective falsehood; then its character for subjective truthfulness is also lost. Absolute scepticism triumphs, and proclaims—

"A life of nothings nothing worth."

But we must guard also in another way against the abuses of this doctrine, and that is by proceeding to discuss the counter doctrine, which forms the natural antidote to its extravagant over-statements.

Relation of the Cognitive Element in Perception to the Object.—In Perception, $C + O$, if O cannot be *known* to exist without C : on the other hand, C cannot *exist* without O . There could be no consciousness of a given object without that object to awaken it. But as two things cannot presuppose each other in the same sense, for the same thing cannot be the antecedent of another thing, and also its consequent, we must understand, that Being presupposes Knowing in the Order of knowledge. But that Knowing presupposes Being in the Order of existence. From the first order springs idealism. From the second realism. Thus these two doctrines are perceived to be quite compatible; halves in fact of the same grand system, in which the idealistic half proclaims, that the realistic half must be accepted as its counterpoise. But this difficult subject demands all the

light which our subsequent investigations may throw upon it, so we shall proceed to show, that although the object only exists *for us* when *known*, that it must exist, if we be not aware of the contrary, when *unknown*.

We annex the above limitation, because there are two classes of objects which differ widely in respect to what we are now inquiring about. Some objects, as thoughts, emotions, and muscular actions of a certain character, only exist while we are conscious of them. We know by the most conclusive evidence that these do *not* exist but when they are perceived. There are other objects, however, which we feel assured have an existence, to which the fact of being known is not in the least essential. From what we perceive of *external* objects, Reason cannot avoid concluding that they have an existence perfectly out of relation to the *contingency* of being perceived by us. For example, Being and (Being + Knowing) are distinct facts. Of the first, Knowing is no necessary part; of the second it is, for eliminate Knowing, and you destroy the synthesis (Being + Knowing), the only Being which there is *for us*, but not the only being. Again, if Being for us presupposes Knowing: Knowing also presupposes Being. If the object cannot be *known* to exist without consciousness; on the other hand, consciousness cannot *exist* without the object. This is the declaration of consciousness. If you ask whether this deliverance be trustworthy, then you raise the further question, is consciousness veracious. Is consciousness veracious? For every argument which we have advanced is worthless, unless the integrity of consciousness is unassailable. We cannot avoid concluding, but this is not the place for stating our reasons, that consciousness must be pronounced thoroughly trustworthy, when the conditions of veracity are strictly fulfilled. But it is only when these are *most rigidly* complied with, that we can insist upon the thorough integrity of our intellectual nature. The replies which every tyro or loose thinker

draws from his consciousness cannot, of course, be deemed infallible. Those replies only which are in strict accordance with the laws of consciousness as a truth-standard can be pronounced beyond the reach of question. The object, consequently, except when we know the contrary, *must* exist independently of us, seeing that it *must be prior* in time to the consciousness which it awakens. In the bowels of yonder mountain may be hidden an immense store of iron and coal. If such be the case, is it not lying there unknown? And what about the gems which the "dark unfathomed caves of ocean bear," and the rose that blushes *unseen*, "and wastes its sweetness in the desert air"? Are they mere fictions of the poet? There is nothing in the nature of the external object that would lead us to infer that it cannot exist out of Perception, or apart from us, for it is strictly an *external* object in Perception. Consciousness exists as memory apart from the object which aroused it. Why cannot the object exist apart from the consciousness which *it aroused*, and to which, consequently, it was prior? Remember, that which exists as a matter of fact, may not exist as a matter of necessity. Of course, nothing exists without being open to the eyes of Him with whom we have to do, the Omniscient. But we must conclude, that being almighty, He has the power to withdraw his mind from a given object, and that then that object would still exist, though absolutely unknown. The question to be decided is, *not* whether any object *do* exist in an unknown condition, but whether it *be possible* for it so to exist? Reason concludes that it is possible; and that the world existed *ages* before man first trod on its surface, and realised to himself its varied and wondrous existence.

Having now stated, as far as we are acquainted with them, the general conditions of cognitive acts, and also a special condition of Perception, the next step is to examine that faculty in detail. But here two courses present them-

selves. The one is to analyse Perception according to the several classes of objects of which it takes note. The other according to its Form. This inquiry is confined, for the present, to an examination of Perception in the latter relation, with the exception indeed of what is said in the next chapter relative to the division of objects into three great classes, the subjective, the *quasi*-objective, and the objective.

CHAPTER III.

GRAND DISTINCTION BETWEEN THE OBJECTS OF CONSCIOUSNESS.

EMOTIONAL objects, local and mental, and also *quasi-objective* objects, form a distinct class, which must be called subjective; while the remaining objects must be styled objective. Now, the chief distinction between these two classes is, that the subjective objects have no existence, but when they are experienced. They have no existence, but in us, and in us only when they are felt. The objective objects, on the contrary, though they can exist *for us* in the perception alone, yet have an existence in the perception—so consciousness testifies—out of us.

From this, and from the fact of the external object being, in the Order of nature, prior to the cognition, it is concluded that the objective, unlike the subjective, has an existence, not only in the perception, but out of it, that is, *when not known by us*.

Another distinction which separates these two classes of objects from each other in a striking manner is the fact, that the two elements—object and cognition—appear confused in subjective, but not in objective perception. In the case of tooth-ache, for example, where is the object, as distinguished from the cognition? It seems impossible to detect any difference between them; and yet, to the perceptive faculty, a tooth-ache is an object of thought, and can

be predicated of as such as much as any external object. It is the same with a mental emotion, it seems impossible to detect the two elements of the perception in it, yet it is placed in the same category, in regard to *form*, as the most distinct exterior object.

But, there is one class of objects which holds a place midway between these two. These objects are the *quasi-objective*. They stand aloof from the cognition in the perception, as if they were unwillingly detained within the sphere of the extended animation which forms the object of the fundamental perception. In this respect, they resemble objective objects, and, therefore, it is, that we have ventured to style them *quasi-objective*. In other respects they are purely subjective; they exist in us alone, and that only when experienced.

It is between the emotional and the objective objects, therefore, that the contrast which we are considering exists in full force. The *quasi-objective* objects hold a place between these two, being objective practically, but subjective speculatively.

In the perception of emotions, because the two elements seem to be confused, it is common to describe the whole perception in one only of its aspects. Thus, we speak of feeling, and being cognizant of feeling; or, having a sensation, and being conscious of a sensation, as if one and the same thing. Hence, some metaphysicians locate all bodily pain or pleasure in the mind. And, to be consistent, they must identify all mental emotion also, with consciousness. This is paying little deference to the persistent asseverations of consciousness, that a pain, *e. g.*, is there where it is felt to be. Thus, if we feel pain in the foot, we say the pain is in the foot, the consciousness of it in the mind. At the same time, it must be confessed, that if we begin to distinguish between the one and the other, we fail to do so. Yet, in a certain way, we remember the pain, we make it the

object of thought, for we predicate of it certain qualities or their absence, and treat it in respect of *form* exactly as we would any object which is not of an egoistical nature. All this, to our minds, affords good reason for classing it with the *objects* of consciousness. Indeed, the fact that the object is equally as much within the *ego*, as the consciousness of it, both practically and speculatively, is enough to account for this seeming confusion. *If the object be not known as being in one sphere of extension, and the subject in another, as is the case in objective perception, it seems to us, that this seeming confusion is a necessary consequence.* If the object be located, but not the cognition, the latter will seem to be one with the former. If neither be located, they will seem mutually one. And this is so in each case, because there is *no contrast* to separate the consciousness from the object, or both from each other. We may, from this point of view, describe objective perception, therefore, as that in which the object and the cognition are known as being, each in a distinct sphere of *Extension*. And we may describe subjective perception, as that in which the cognition is not separable from the locality of the object, if that be in the organism; or cognition and object from each other, if both be unlocalized or mental, that is, not apprehended as involving space; all that is known of them, in this respect, being, that they are within the man.

It will be seen, from what we have now written, that we can find no reason for regarding sensations, feelings, sensibilities, sentiments, desires, passions, excitements, or whatever is akin to emotion, as one class of cognitions; and perception as another. On the contrary, we find reason for thinking, that the class emotion is a very distinguished body forming one of the wings of that grand army of objects, of which perception holds the immediate command. And when we enter upon the more logical sphere which forms the next portion of this inquiry, we believe that reasons will emerge which will commend this classification to the reader's

acceptance, more effectually than anything which we have been able to advance in its favour, in the chapter which is here brought to a close. It will then be seen, that although the objects of Perception are of various kinds, some being internal, namely, mental and bodily affections, and some external, yet that Perception itself, since it has but one form, varies not, let its objects vary ever so much.

PART II.

OF PERCEPTION AND CONCEPTION IN RELATION TO FORM.

“If it be said that Logic, as a formal science, is a lean and barren doctrine—be it so. But this reproach only affects the science through its object. Now, this object is the legislation of thought; and if the laws and processes which it displays be unimportant and uninteresting, they are the laws and processes by and through which, and which alone, what is nearest to us and noblest in creation executes its marvels. ‘On earth, there is nothing great but Man; in Man, there is nothing great but Mind.’ It is not, surely, imagined that there are other laws and processes of thought competent to the human intellect, besides those of which Logic is the exposition.”—*Sir W. Hamilton’s Edition of Reid’s Works*, p. 698.

PREFATORY REMARKS.

It is necessary to preface the part which here commences, by stating that we must suppose that the reader has acquired an ordinary knowledge of the technicalities of logic, and has some acquaintance with the speculations of modern logical writers, especially with those of the late Sir William Hamilton, and those of Mr. J. S. Mill. To be obliged to explain all the terms which we shall have occasion to use, would be inconvenient and irksome, and not at all in consonance with the brevity which it is expedient for us to use, and especially with that distinctness which is so needful to the successful exposition of what we have here undertaken. And why should we exercise our ingenuity in varying descriptions of mental processes already expressed with such abundant variety in the works of able logicians? Since, then, we do not seek to write a system of Logic, but merely to record the leading results which we have as yet obtained from examining the landmarks on ground not recently much explored by the investigators of logic, much minuteness will not be demanded from us. And here we desire to state that all that is peculiar in these contributions arises from adopting this separate course.

Mr. J. S. Mill declares, "that logic," because it has no concern with the ultimate facts of the mind "is, common ground, on which the partisans of Hartley and of Reid, of Locke and of Kant, may meet and join hands."* And again he says, "that logic has no concern with the nature of the act of judging or believing, the consideration of that act as

* Mill's 'System of Logic.' Introduction, § 7.

a phenomenon of mind belongs to another science."* Bishop Thompson also states that: "Our conceptions are formed from single objects; how do we come to know these? The logician replies that it is not his business to show how."† Mr. Devey also declares, that all these questions "involve metaphysical theories, concerning which the greatest minds have differed, and are quite extraneous to logic, which deals with principles about whose cogency there cannot be the slightest doubt."‡ Now, we have made it our duty to attempt precisely the very task which those logicians assign to the metaphysician; that is, to interpret logic by the light of psychology. And if there be anything worthy of acceptance in these contributions, it arises chiefly from a steadfast adherence to the method which we have deemed it right to pursue.

* 'System of Logic,' chap. v, § i.

† 'Outline of the Laws of Thought,' p. 10.

‡ Devey's 'Logic.' Bohn, b. i, c. iii, § 1.

CHAPTER I.

PERCEPTION IN RELATION TO FORM EXAMINED.

PERCEPTION—Constitution of Perception—Source of Language and its Uses—Of the Form of Perception—Abstraction and the Formation of Terms—Connotation of Names—Function of the Copula—Objections and Answers.

Constitution of Perception.—Perception, the primary act of consciousness, in the only state which it is important to notice in this inquiry, is an active faculty. It may exist in a more or less passive condition, but it leads in that condition to no results such as call for examination in a psychological investigation of this nature. By the activity of perception, we mean the fact of its reacting upon the object which in the order of nature calls it into existence. By its passivity, we mean the fact that it does not thus react upon the object.

Active perception, then, when unmodified by the other faculties, is the apprehension of an object, as a Whole consisting of such and such attributes,* but differing, 1. *Internally*—the Whole from the attributes, and the attributes from each other; 2. *Externally*—the object from other objects.

The Whole here mentioned is that of Comprehension, the characteristic of which is, that you cannot predicate of its parts, what you can of itself, as in the Whole of Extension.

* By attribute we must mean simply that which pertains in any way to the whole. The reason will appear presently.

The word *all* when applied to it does not imply *every*. Thus, *all* the inhabitants of Britain amount to so many millions, but *every* inhabitant of course does not.

Objects, as perceived, are said to be in the Category of Difference.

Difference determines the form of Perception; and that portion of the definition which constitutes the clause:—"as a Whole consisting of such and such attributes," may be left out of view in logical science, which deals not so much with the matter, as with the form of thought. Now this form embodies itself in language, which, therefore, must have a prominent place assigned to it in Logical Psychology.

Source of Language and its Uses.—When we mention the source of language, we mean simply its present source, namely those faculties through the instrumentality of which we acquire it, use it, and understand it.

We cannot discover that speech is necessary to the operation of Perception, nor to the lower or merely passive operation of Conception. But Conception operating with any degree of activity, and also Perception—its powers enlarged by combination with the other faculty—in short any active operations of the intellectual powers, require language as their instrument; for speech bears about the same relation to thinking, as agricultural implements do to husbandry, that is, indispensableness as a mean to the attainment of the desired end. Perception has such a multiplicity of objects to take note of, each object possessing so many parts, and part-parts, that if every object, part, and part-part had to be separately named, language would be a burden, rather than an aid; and thought, from its extreme complexity, would be incapable of attaining to anything beyond the lowest degree of expansion. But when to Perception Conception is added, then language, by expressing the simplifying and methodizing operations of that faculty, greatly facilitates thought. And upon it devolves the office of recording the results which accrue from the endeavours of

Conception to reduce our discriminative knowledge of this, that, and the other thing, into a class, and to recall such results whenever an occasion occurs. There are several other functions of language, such as the very obvious one of communicating thought, and also of abbreviating it. Language also records the events, experiences, and cogitations of the past, as a foundation for the present generation to build upon, but we must resist the temptation of discoursing upon these topics here, and proceed to survey the landmarks only of our theme.

Of the Form of Perception.—The form of Perception is afforded by the proposition in its most elementary state, that is, when it is regarded in so far as it gives expression to Perception alone, and not to either of the two remaining originating faculties. The symbolical form which we have selected to express perception, is *W is a*. *W* stands for an individual or Whole of Comprehension: *a* for a part or attribute of that Whole. Now, the subject and predicate of this proposition must, in the Category of Difference, be considered as strictly singular, yet at the same time connotative, implying marks, or possessed of comprehension. That we possess the power of so regarding them is evident, for Perception is logically prior to Conception, or the faculty which invents common names. We abstract from a common name the fact of its being common, and consider it as exclusively a singular name. The reason why terms in this category must be viewed as singular is, that Perception cognizes objects as isolated from each other. It has no knowledge of them as united by a bond of similarity, and therefore expressible by a term having a plural form to denote a plurality of objects. For each object as known to Perception, it would be necessary that there should be a separate name, which, therefore, would have no plural form.

Abstraction and the Formation of Terms.—Although there is no operation of the mind so simple as that which a term

represents—the mental operation to which a term answers being part of an undivided act of mind, and that act prior to every other—yet, in reflective observation, we always fix the attention on some one part of this complex operation at a time, and withdraw it from the other parts, in order to resolve the operation into its constituent elements. This procedure is called abstraction, which signifies, not the actual separation of one part of an individual act from another part—which is an impossibility—but the withdrawal of attention from one part of an object, in order that another part may be attended to. When the proposition itself is attended to in detail, the part attended to is cognized as a Whole, embracing parts; that is, such act of attention can itself find expression in the proposition only. See Law of Attention, further on.

Abstraction in the Category of Difference is quite distinct from generalization, being confined to a single individual at one time. Thus, we attend to the Whole of Comprehension, which answers to the subject of the proposition, more than we attend to the attributes of that Whole, and give it a name. We attend to the parts in succession, each of which answers to the predicate of the proposition, more than to the Whole to which they belong, and give to each of them a name; and thus terms have their origin.

Some words, since they stand for parts of a Whole, are part-names. And since some parts embrace certain parts of their own, there are also part-part names. Thus in *remarkably eloquent*, the first word is a part-part name, the second a part-name. If eloquent be made a whole name, eloquence, then remarkably becomes a part-name, remarkable.

But here we must state, that it is not to be supposed that we can think of a Whole without thinking somehow of its parts; or of its parts, as parts, out of relation to itself. But a part may be regarded out of relation to the Whole; that is, may be considered as itself a Whole, or as the subject of a new proposition. For instance, if when thinking

that man is mortal, we dwell upon the attribute mortal, so as to lose sight of man, then we regard the latter as a Whole containing parts of its own, and think some such propositions as the following: "Mortality is inevitable;" "it is awful to contemplate." Hence predicables come to have complete names as well as part-names, in order that they may become the subjects of propositions when required.

Connotation of Names.—When a name is bestowed on an object, it is to designate it in its entirety; that is, to name the whole and each of its component parts, actually in so far as the parts are known, potentially in so far as they are not. Thus the word, water, would from the first actually connote fluidity, and the most obvious qualities of the object which it represents; but, at the same time, potentially connote, or be open to comprehend, whatever other qualities were discoverable in the object, as, for instance, that it was composed of oxygen and hydrogen.

Function of the Copula.—The copula in this category expresses the conjunction or non-conjunction of a whole with a part. It does not appear that it expresses more than this, for example, the existence of Whole and part. But it does seem to express the actual, not the hypothetical conjunction of these, as we shall presently see. When we say that the copula expresses conjunction of a whole with a part—a subject with a predicate—we must be understood to mean, by conjunction, a generic term which denotes several species of conjunction, each of which will be examined in the proper place.

Predication, in this category, is of two kinds; the one, incomplete, answering to a particular proposition in the Category of Resemblance or Whole of Extension; the other, full, answering to the universal in the same category. Thus, "A triangle is a figure," is, when attention is called to the fact, and an explicit statement of it sought, "A triangle in *part* of the comprehension is a figure." And "A triangle is a three-sided figure," when similarly regarded, is, "A triangle

to the *whole* amount of the comprehension is a three-sided figure." The definition is a proposition, full, both in the Whole of Comprehension, and the Whole of Extension.

Having now mentioned the leading characteristics of Perception in relation to form, we must, in the next place, address ourselves to the task of answering the objections which are likely to be urged against the doctrine here propounded, and thus at the same time more fully elucidate our position.

Objections and Answers.—It will probably be objected, that the definition of the proposition is, "judgment expressed in words;" and that judgment is that operation of the mind which decides whether one term shall be affirmed, or denied of another term; and is quite distinct from Perception.

Allowing what is here urged to be true, it nevertheless seems certain that the proposition is the correct expression of Perception. The ability to determine whether one term shall be affirmed or denied of another, must, in the first instance, arise from knowing that what the terms represent, have been perceived in conjunction or otherwise. What is judgment but an appeal to memory as to whether a certain attribute pertain to a certain whole, or the contrary? And that memory must have its origin in Perception is undeniable.

But, again, it may be objected that a judgment is complete, although there exist no such object as that with which it is occupied; and that a proposition which communicates such a judgment is in every respect as valid as one which communicates a fact. It is only by holding the exploded doctrine, that the copula asserts existence, that judgment can be defined to be a perception, or the re-collection of the element of a previous perception. For instance, in the proposition, "A dragon is a fiery serpent," there is as perfect a proposition, as in, "Calomel is chloride of mercury." In short, we must clearly distinguish between the validity and

the truth of a judgment, in the same manner as we distinguish between the validity and the truth of an argument.

In answer to this, without being forced to deny what is here objected, it is maintained that the copula does usually assert the actual conjunction or non-conjunction of a Whole and a part. In the proposition, "Ice is frozen water," it is not affirmed that ice exists, but that it is composed, whensoever or wheresoever existing, of water in a state of congelation. And, in the other example, the copula does not affirm the existence of a dragon; but postulating that, it is further postulated to be a fiery serpent.

Perhaps, it may now be objected, that the form being precisely similar in both the examples here cited, there is nothing to indicate the difference which is contended for. What is true of all propositions must be that which is true in such an example as, "A dragon is a fiery serpent."

Without having occasion to gainsay even what is now urged, it is quite competent for us to maintain, that the proposition is no less the expression of Perception in words, because we can abstract the matter from the form, and regard the latter to a certain extent by itself, or in combination with fictitious matter. Allowing that the affirmative copula can only be equivalent to the word means, in every proposition—for in two propositions one true, and another false, that is the only equivalent to *is* of which the case admits—yet the meaning of words must, in the first instance, suppose a correspondence with fact, which means a perception. Is it true that wool is not the natural covering of the sheep, because we read of a wolf in sheep's clothing? We owe the genesis of the proposition to Perception, all the objections here urged notwithstanding. The water that you would throw upon our ember turns out to be oil, and serves to kindle a flame to afford more light. False propositions pre-suppose true ones, for it is on the model of the true that they are constructed. Truth is the real: falsehood the

counterfeit. Imagination pre-supposes Perception. Fable pre-supposes fact. True propositions and false are therefore not co-ordinate. The *usus loquendi* is, that the copula asserts the actual conjunction or non-conjunction of what the subject represents, with what the predicate represents. For it is usually sufficient to lay stress on the affirmative copula, if it be held that the conjunction is real; whereas we must say, is supposed or postulated, if it be a fanciful invention. If objectors will bear in mind, that it would be impossible to frame a proposition, false or symbolical, unless propositions had previously arisen out of our perceptions, we shall confidently expect their ultimate acquiescence in the doctrine here proposed.

It appears to us that we may go too far in drawing the distinction between matter and form in logic. The form, it is said, is all that logic is concerned about. It is a science of the form, or of the formal laws of thinking, and not of the matter. And these formal laws, it will be maintained by some, are the mind's contribution to an object of thought; that is, the matter supplies one element of Perception, and the form the other element. We can discover no evidence of the truth of this theory. What is called the form seems to be equivalent to the most general nature of the matter. The constitution of Perception tallies exactly with this most general nature of the object. The object is a Whole containing such and such attributes; but differing, the Whole from the attributes, and they from each other, &c. And the *cognition* of this generic relation between a Whole and its parts, &c., affords the *only* form which we can construe to our minds as intelligible. The cognition is relative to the object, and out of relation to the object cannot be realised, is a nonentity. So whatever may be said about the abstraction of the matter from the symbolical proposition, to retain as much of it as answers to the form, is absolutely necessary in order that such a proposition should have any import. And since the proposition in question is a kind of

speech, the supposition that it has no import involves a contradiction.

Now, all objections which can be raised against what we have here advanced may, we conceive, be answered by this concession: Although the proposition is, in the first place, the expression of Perception, it may nevertheless be made to express any thought framed after the semblance of Perception. It is capable also of expressing more than has been here claimed for it. We shall now, for example, have to show that it represents Conception as well as Perception. And in the next part of this inquiry, we shall have to show that it does the same for Reason also.

CHAPTER II.

CONCEPTION IN RELATION TO FORM EXAMINED.

CONCEPTION—Constitution of Conception—Of the Form of Conception and of Common Terms—The First Step from Perception to Conception—The Procedure from Concrete Thought to Abstract—Of the Quantity of Propositions, and First of that of the Subject—Laws of Attention—The Principal Law—First Sub-law—Second Sub-Law—Third Sub-Law—Nature of General Notions in the Category of Resemblance—Of the Quantity of the Predicate of Propositions—Function of the Copula—General Observations on the Marks of Quality and Quantity.

Constitution of Conception.—Conception is that faculty which apprehends resemblance between two or more Wholes of Comprehension.* It involves Perception. The plurality of objects of whose similarity it takes cognizance, forms a numerical Whole, or whole of Extension.

Objects as taken note of by Conception are said to be in the Category of Resemblance.

Of the Form of Conception, and of Common Terms.—The form of Conception is afforded by the proposition with the predicate, or both subject and predicate, common to a plurality of individuals. Let it be distinctly borne in mind that with Perception alone there would be no common

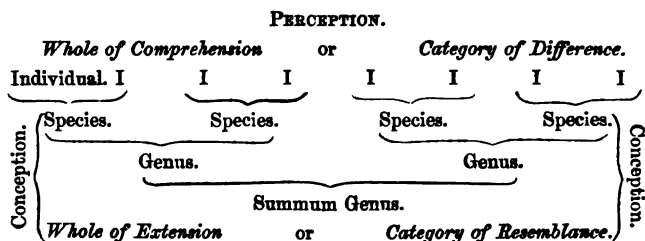
* It is "the power which the mind possesses of taking several things together (*concipere*, i. e., *capere hoc cum illo*)."—Thompson's 'Outline of the Laws of Thought,' § 48.

term, no Whole of Extension. There would be a confusing multitude of Wholes of Comprehension entirely isolated from each other, and therefore most difficult to remember. That which binds these into one whole, is Conception. *W is a, W is a*, which is the only method in which Perception cognizes its objects, from perceiving no resemblance between them, are expressed by Conception, because it does perceive such resemblance, as *W's are a's*. Objects are cognized by Perception as non-identical. These non-identical objects resemble each other in certain respects. Conception apprehends this resemblance. While *identity* and *non-identity*, then, are known by Perception; *resemblance* and *non-resemblance* are known by Conception.

Care must be taken to keep the notions of identity and similarity apart. Identity does not admit plurality. Resemblance, on the other hand, involves plurality, or two non-identical objects. So does non-resemblance.

If an object be presented to us this moment, and then be withdrawn; and the next moment another, precisely similar, be presented to us, we shall be in doubt whether it be the first object or another. Perfect resemblance, therefore, when non-identity cannot be detected, leaves the impression of identity, accompanied merely with non-identity of presentation.

The first step from Perception to Conception is expressed by a number of individuals having a common attribute predicated of them, as $\{A, B\}$ are *C*, $\{P, Q\}$ are *R*; in which *C* and *R* represent the first common terms. The second step is where *C* and *R* have a common attribute predicated of them, as $\{C, R\}$ are *G*. This procedure goes on until we come to regard everything as possessed of a common predicate, that is, till we arrive at what is called the *summum genus*. The following table will illustrate, more clearly than an elaborate description, the procedure which we have here attempted to sketch.



In this table, only three steps are described; but these serve to illustrate all that takes place in the longest series of generalizations from individuals to the *summum genus*.

Since the remarks to be made on this table are to be kept clear of those which would be called for in a systematic work, we shall merely state, that in it there are two extremes, the one is that of difference, the other that of resemblance. The mind begins with that of difference. The more that is abstracted, the greater the number of the resembling units of the whole of extension. And the more resemblance is abstracted or difference resumed, the greater the number of the differing parts of the whole of comprehension. Now, if we abstract difference as far as we can, we arrive at the *summum genus*. On the other hand, if we abstract resemblance altogether, we arrive at that which is peculiar to an individual, the fact of not being identical with any other object; a fact represented by a proper name. Proper names, therefore, and the *summum genus* are the two poles of the table. The former represent difference, all resemblance being abstracted. The latter represents resemblance, all difference being abstracted. To enlarge the sphere of resemblance is equivalent to diminishing that of difference. And to enlarge the sphere of difference is equivalent to narrowing that of resemblance. In other words, extension and intension, or the extent and the content of terms, bear an inverse ratio to each other.

Terms, then, we have seen, are formed in the Category of Resemblance, by simply making those that were originally formed, in the Category of Difference, *common* terms. For instance, in that category, if an object be given a name, that name is potentially connotative of every attribute of that object. If a certain object be called "mountain," this term potentially connotes every attribute of that object. After this, if another object be discovered so like the first, that it is spontaneously called by the same name, this only can be done by limiting the connotation of "mountain" till it embrace exclusively what is common to the two mountains. Now, what is thus common to the two can be predicated of the name without limitation, as, "The mountains are lofty." But what is peculiar to each cannot be predicated of mountain, without limitation, as, "This mountain is rugged," "that is smooth." When a greater number of mountains come to be known, the connotation of the word will be still further dropped. But the qualities which each of them possesses in common will constitute the connotation of the word, as, "All mountains are lofty." What a certain number of them only possess in common will be predicated as accidents, *i. e.*, something additional to the comprehension, as, "Some mountains are capped with perpetual snow." When we predicate of a name that which it connotes, the proposition may be either universal or particular. When we predicate of it that which it does not connote, the proposition must be particular only. This seems to us the method in which common terms are constructed.

If it now be objected, that a common name fully expresses both Perception and Conception, without using it in a proposition; that when we ponder over a list of names, such as, lion, tiger, leopard, panther, we entertain the notions of the animals which they denote as completely as when we read declarations concerning them, we answer, that the common name serves to elicit thoughts, the only complete expression of which is the proposition. Every such name

is indeed a compendium of all that can be predicated of it analytically. In order to understand a common name, we must think of the object which it represents; and we can only think of that object by calling up some of its attributes. To deny this, is to deny the possibility of thought, which only exists in so far as non-identicals are discriminated from each other; in so far as it operates in the Category of Difference. One meets a common name, for example, Gorilla. Now, if one understand the meaning of this term one must mentally *assert* that it is the name of an animal, which is the denotation of the word; and that this animal possesses such and such qualities, which is the connotation of the word.

There is a seeming exception to what is here insisted upon, in the case of a proper name; a simple abstract quality, such as whiteness; and the *summum genus*. A proper name, since it only represents an object as non-identical with any other, must, it may be thought, be predicated of synthetically. It connotes nothing, except it be the fact of non-identity. Whatever, therefore, is asserted of it, is something added to it, that is, the statement is a synthetical one. A simple abstract quality, such as whiteness, can also have no connotation capable of analysis. Whatever is predicated, therefore, of whiteness, must be something added to it. The *summum genus* also only represents a simple attribute. Whatever is predicated of it must consequently be an addition to it.

It is quite evident that if thought is analytical in its first out-going, it must have the power of reversing its process, and of reconstructing into complex wholes, the parts into which it had previously analysed those wholes. All thought moves in one or other of these directions. Every common name, such as man, has its connotation unfolded, which is analysis; or has something added to its connotation, which is synthesis.

From what has now been advanced, it will be inferred

that the whole which, without exception, forms the subject of a proposition may be either simple or complex. If the former, it can only, it may be urged, be regarded from the synthetical point of view: if the latter, either from the analytical or synthetical. But now arises the question, how is this simple whole perceived? If it be asked how the complex whole is perceived, the reply is, "through the medium of its parts." This cannot be the case when a simple Whole is perceived, you opine, because it has no parts. To suppose that the simple is perceived through the medium of what is appended to it, can find acceptance with no one; for how can we perceive a simple Whole through that which cannot be a constituent element of it. The fact is, there must be something by which we can grasp these simple notions; and something also by which we can distinguish them from other notions, as well as something by which we can class them. Thus, of non-identity we can predicate that it is the singular attribute, which is the *differentia*, of every object, which is the *genus*. Of whiteness we can predicate that it is a quality, which is the *genus*, *sui generis*, which is the *differentia*. Of the *summum genus* we can predicate that it is the attribute, which is the *genus*, that is common to all things, which is the *differentia*, for no other attribute is common to all things. We come to the conclusion, then, that simple notions are known, because they are possessed of something knowable, and because this something, moreover, is distinguishable from everything else; that is to say, Perception takes note of something, and also the fact of its differing from other things. Conception, moreover, takes note of that in which it resembles other things.

The Procedure from Concrete Thought to Abstract Described.—A striking fact in connection with Perception and Conception is, that while the first is exclusively engaged with the isolated units of individuality; the second loves to find rest in the unity of resemblance. The procedure from the first extreme to the last, is that from the con-

crete to the abstract. When Conception takes note of a number of singular objects which resemble each other, it gives them a common name; and if the objects be thought of in one view, the name expresses the fact by having a plural form. The tendency towards unity, therefore, does not stop here. But Conception seeking rest, as it were, in perfect unity, abstracts even non-identity, or difference in number, and merges the resembling units into fewer units, and ultimately into one. The result is an abstract noun. Hence, such terms as humanity, whiteness, colour, and old age; some of which, being singular abstracts, may be called factitious individuals.

Here we must explain, that it is the use which we make of a word, as much as its form, that must determine whether it be concrete or abstract. If we say, "Man is frail," we use man as an abstract noun, as a factitious individual. If we say, "A man must be cautious," we use it as a concrete noun, because we speak of a man as one of many. Difference in number is not abstracted.

Some words become singular abstracts by one step. Thus, from old men and women we arrive at the singular abstract old-age, by one removal. Other words become common abstracts at the first step, and singular abstracts at the second. Thus, from coloured things we derive the common abstract, colour, at the first removal, and the singular abstract, as, in "Colour is his forte," at the second removal.

It should be remembered, that the common attributes of an object are as much objects of Perception as if there were no faculty to recognise their similarity to other attributes; and consequently may be thought of as exclusively in the Category of Difference, because Perception is logically prior to Conception. This being the case, it is difficult to understand why a rose, *e.g.*, cannot be thought of without bringing it under the class rose. We cannot see why it may not be viewed as if it were the only rose in existence, in the same manner as a monotheist thinks of God. It is quite true that

this is not usually the method in which we think of an object; for we generally regard it as one of a class. When we perceive a rose we know it, not so much by then and there scrutinizing its several qualities, as by means of the notion which we have acquired by observing roses in general.

Of the Quantity of Propositions, and first, that of the Subject.—It is only the subject of a proposition that is commonly considered as a whole of extension. For it must be remembered that Conception acts so as to multiply the formula *W is a*, into *W's are a's*. In which procedure the predicate is multiplied as many times exactly as the subject, being a part of it; but is not regarded as possessing any quantity distinct from the whole of which it thus forms a part. Thus, in the proposition, "Men are sinful," all that is commonly attended to is, that sinful is co-extensive with man; for this is all that is usually required to be known. Now, this fact elicits the question, what are the laws of attention? For on these laws hinges what Sir William Hamilton has called the fundamental postulate of logic, namely, "that we be allowed to state in language what is contained in thought."

Laws of Attention Examined.—A single act of attention of the simplest character, we believe to be a perception. For attention is not a separate faculty, but a mode of the operation of our cognitive faculties. The keen, vigorous, or curious activity of these, however induced, whether by explosion of force internally, or by an exciting cause externally, constitutes, in our opinion, an act of attention. The laws of this mental operation seem to be four, one principal, and three subordinate.

The Principal Law of Attention.—A single act of attention is expressed by a simple categorical proposition, that is, you cannot attend to that in an object in one effort, which we are obliged to express in two propositions. Thus, if we say, "This ball is round," "Some winds are cold," "All snow is white," we can attend in one effort to what we assert in each of these propositions. But if we say, "This ball is hard and round," it seems that we must use two efforts of attention;

and that such a proposition is only a concise form of stating that "This ball is hard," and "The same ball is round." We conclude, therefore, that every compound proposition gives utterance to more than one act of attention. When a proposition apparently compound cannot be reduced to two, as, "John and James supported the basket," i. e., between them, there is but one effort of attention expressed.

1st Sub-law. Attention is confined to what is essential to the purpose at which we aim.—Thus, in the proposition, since it is sufficient, for ordinary purposes, to regard the subject only as a whole of extension, and the predicate exclusively as a part co-extensive with it, attention is not directed, but, in the second place, to the predicate notion as forming a whole of extension equal to, or exceeding that of the subject. It follows, therefore, that propositions are to be divided, in *the first place*, according to the quantity of the subject, as is ordinarily done, that is, into singular or universal affirmative, and particular affirmative; and into singular or universal negative, and particular negative. When, however, attention is directed to the quantity of the predicate, there are not two acts of attention involved, but merely one, because the quantities of both terms of the proposition are regarded in their relation to each other.

An important instance of this sub-law is, that mental processes are not objects of attention, unless by a special effort, a reflective one, we make them such. And even then some of them are so hidden, that it requires the most diligent search to find them. We ordinarily attend to an object, but not to the fact of attending to the object. Hence, the mental process not being contemplated remains necessarily unknown. This accounts for the difficulty of introspective research. And no matter how clear and simple a thing appears when known, before that event it is but a vague something in the realm of shadows.

2nd Sub-law. In the Category of Difference, the more we attend to a whole, as a whole, the less do we attend to any part; and the more we attend to any part, the less do we attend to

the whole.—Thus, if we attend to the *tout ensemble* of a man, we cannot, at the same time, be minutely examining him in detail. Or if we attend to minute points, we cannot be paying much heed to the *tout ensemble*.

We may attend so earnestly to some one point as to lose sight of the whole to which it belongs, and thus make that point the whole which we are contemplating. We may perceive that a tree is very wide-branching; and if we be so much impressed with this feature as to lose sight of the tree, then the fact of being wide-branching becomes the subject of a new proposition. The *genus* in the former proposition becomes the *species* in the latter.

3rd Sub-law. In the Category of Resemblance, which involves the former Category, the more we attend to the comprehension of a notion, the less do we attend to the extension; and the more we attend to the extension, the less do we attend to the comprehension.—For since the greater the depth or comprehension of a notion, the less the breadth or extension, and *vice versâ*, it follows that one of these must absorb the attention at the expense of the other. If we watch minutely the habits of bees in a glass hive, we shall be constrained to observe single bees, and lose sight of the many. But if we be attracted to the many, we cannot, at the same time, be attending minutely to single bees.

We have endeavoured, like Sir W. Hamilton and others, to ascertain how many things, *e. g.*, pins in close contact in a row, we can pay heed to at one time, so as to realise each pin, and we find that the utmost number is eight. But even this we cannot do without mentally dividing the eight pins into two divisions of four each. With this aid, we succeed in realising each pin.

If neglecting single objects we endeavour to attend to a great number of objects at once, as for instance, to snow flakes in a snow storm, we have only an indefinite idea of their number. We know it is very large, but how large we cannot tell. Yet in this case we know that we do not see all the flakes, but only some of them. The notion of quantity, here, therefore,

is relative (particular) and indefinite. It is possible that we should be able to contemplate at once the whole of a certain number of objects, for instance, sheep in a pen, and yet have only an indefinite idea of their number. Here the notion of quantity is absolute (universal) yet indefinite.

Nature of general notions in the Category of Resemblance.

—From the observations recorded in the preceding paragraph, we draw important conclusions in reference to the nature of general notions. If attention cannot be yielded to more than a very limited number of objects at one time, so as to be conscious at once of their exact number, of what kind is the notion of quantity which occupies the mind when we say, "All men are mortal"? It is quite evident that we neither do, nor can, know the exact number which the word *all* represents in such a proposition. We do not even realise, without successive acts of attention, the numerical quantity of such a statement, as, "Some Englishmen are great poets." Indeed, we only realise the exact number of a great many units by that operation which Dr. Whewell has aptly styled the Colligation of Facts, that is, a process which enables a number of details, attended to in succession, to be summed up in a single expression; in short, when applied to quantity only, the process of counting. Have we then, in logic, anything but an indefinite notion of the quantity of propositions? Not commonly. The attempt to procure a definite idea of quantity, even where that is practicable, involves counting. In universal propositions, such as, "All men are mortal," it is quite impracticable; for who will undertake to state with numerical precision the quantity of such a proposition? What is the precise meaning, then, which we attach to the mark of universality in logic? We can here only partly reply to the question. The full answer can only be given when Reason comes to be explored. The reply which we are enabled to yield in this place is, that it is absolute and definite, or indefinite. It is definite in such instances as, "All the men numbered 1,000." It is indefinite when the number, either from being infinite

or because there is no opportunity of computing it, is not to be ascertained. Necessary and universal propositions are invariably indefinite.

From the foregoing we may glean that general notions do not always present the same features to the mind. They may be regarded as possessed of absolute quantity, as "All men are bipeds;" or of relative quality, as, "Some men are eloquent," or, "A man is not to be bought or sold." They may also be regarded as factitious singulars, as, "Royalty commands respect." Since they have these varying features, not to mention others which cannot be appropriately considered in this category, it is no matter of surprise that there should be a difference of opinion as to the chameleon's colour.

Of the Quantity of the Predicate of a Proposition.—From the first sub-law of attention we inferred—that which the practice of logicians from Aristotle down to Archbishop Whately fully corroborates—that the predicate in propositions is not ordinarily quantified, even in thought, except in so far as it forms a portion of the subject. But here we must distinctly aver, that it does not follow from the first sub-law, that the predicate *never* is quantified in thought. If an occasion arise to create a necessity for this, then it will be quantified; and a correct system of logic must not ignore the fact. We accordingly believe, with the limitations indicated above, that Sir W. Hamilton's new doctrine on this subject, especially in connexion with the conversion of propositions, is fully called for.

Propositions, therefore, although divisible in the *first place*, in the manner usually taught by logicians, are, for special purposes, divisible, in the *second place*, according to Sir W. Hamilton's plan.

Here we must remark, that when the predicate is quantified in thought, there is only one act of attention demanded, because the quantity of the subject notion and that of the predicate notion are regarded in their relation to each other, as the one contained and the other containing. It cannot

be objected, therefore, that the quantification of the predicate involves a second proposition, because two things regarded in their relation to each other demand but one act of attention.

As a specimen of the advantage of thinking of the converse of propositions, we select the declaration, "A necessary truth is that, the negation of which is inconceivable." This has been disputed. Instances have been enumerated of men, and scientific men, holding certain statements to be evidently true, because the negation of such statements was to them inconceivable; while the wonder is now, how such statements could for a moment gain credit among them. They, for instance, denied the existence of antipodes, because the contrary belief had taken such firm hold of their convictions that they could not shake it off, or, which is the same thing, because they could not admit the conceivability of the negative. Now, by thinking of the converse of the proposition, "Necessary truths are those the negative of which is inconceivable," much light is thrown on the question in dispute. We then know that necessary truths are *some* of those statements whose negation is inconceivable. There are some declarations, therefore, whose contrary is inconceivable which nevertheless are not necessary truths. Hence, we discover that it is essential to define the exact kind of inconceivability that is meant by the declaration before us, which must be that arising from being in opposition to the laws of consciousness as the truth-organ. The other kind of inconceivability is the result of ignorance, or of some intellectual or moral incapacity. Thus, that $5 + 5$ do not equal 10 is inconceivable in the first sense. But, that Friday is as favorable a day as any other on which to commence an important undertaking, is inconceivable only to those who are not accustomed to undo ill-founded associations, that is, inconceivable in the second sense.

Function of the Copula in the Whole of Extension.—We have seen that the copula in the Category of Difference is

strictly singular. In the Category of Resemblance, while it retains the function which it performs in the prior Category, that of joining or disjoining, it becomes, like the terms of the proposition, common instead of singular, and therefore assumes a plural form. And now, since it is the subject only of the proposition that is reckoned, in the first place, as a whole of extension, we have the formula *W is a*, simply multiplied into *W's are a's*; in which the copula is supposed to be multiplied as many times as the terms are. If, in the second place, the predicate notion be regarded as a whole of extension, and its extent be compared with that of the subject notion, the copula joins the two terms to the extent of that which is the less in extension. Thus, if there be 50 men on horseback among 100 men, 50 men on horseback are 50 of the 100 men.

General Observations on the Marks of Quality and Quantity in the Proposition. — The divisions of the copula, apparent from the form, are affirmative and negative, *is* and *is not*. The copula is the genus of which these are two species. From this we infer, that whether we affirm or whether we deny, a similar mental process takes place, *i. e.*, to perceive the presence of a quality, and to perceive the absence of one, are acts which come under the same head, namely, perception of a whole and simply something pertaining in any way to it. This is the most general view of the perception which we can take. The fact, for example, that the copula is a genus, divisible into affirmative and negative, and also that assertion is a genus, divisible into the same members, indicates that there is a correspondence in the mental act to which these give expression. Perception is, indeed, in the ultimate analysis, the apprehension of a whole, and simply something pertaining in any way to it.

But now we must be careful to guard against the error of confounding two species together, because, having a fundamental resemblance, they come under the same genus. Affir-

mation and negation are not the same processes, because, they have a common attribute, and can be brought under the same denomination. This were entirely to overlook their *differentie*. The one is an affirmative assertion. The other is a negative assertion. They only agree in being assertions. The one predicates presence. The other predicates absence. They only agree in being predications.

Some, in opposition to the views here stated, have endeavoured to prove that all assertion is affirmative, that when we say, "This man is not learned," *not* is to be considered as a portion of the predicate, as, "This man is not-learned or unlearned." That all assertion is affirmative is, as we have endeavoured to show, untrue. But as the word *not*, may now be an affection of the copula, now a portion of the predicate, it is necessary further to demonstrate that "not learned" and "not-learned" do not express one and the same idea. There is a different act of attention required to comprehend the one, from what is required to comprehend the other. The one states, in the Category of Difference, that "This man *is not* possessed of the attribute learned;" and in the Category of Resemblance, "*is not* in the class learned." The other states, in the former category, that "This man *is* possessed of the negative attribute not-learned;" and in the Category of Resemblance, "*is* in the class un-learned." Now, to regard a man as *not being* in the positive side of a dichotomous* division, and then to regard him as *being* in the negative side, although the two acts imply each other, demand, evidently, a separate act of attention (see Law of Attention); and consequently must, in formal logic, have distinct expressions. In other words, to affirm absence, and to deny presence, involve separate acts of attention; and must be differently expressed.

It has been contended also, that in the proposition, "No man is a stone," *no* is not an affection of the copula, but of

* Let a genus be A, its division according to dichotomy would be, say, into X and not-X.

man, *i. e.* "No-man is a stone." Now, we know that in a dichotomous division, no-man must include everything but man, namely cows, horses, houses, trees, and what not, as well as stones; consequently if we say, "No-man is a stone," then since a cow is a no-man, therefore, a cow is a stone. Where lies the fallacy? In the non-distribution of the middle term, no-man. It should be, "*Some* no-man is a stone." If, "No man is a stone," therefore, equals, "No-man is a stone," the latter must be, "*Some* no-man." Now, who can possibly understand the same thing by, "No man is a stone," and, "Some no-man is a stone?" The word *no*, therefore, must in the universal negative proposition be regarded as strictly an affection of the copula.

There are also variations of the copula which cannot well be unambiguously expressed in common language, because it is doubtful whether a modifying word belong to the copula or to the predicate. If we say, *e. g.*, that "Man is necessarily an animal," we know from the grammatical rule touching adverbs, that necessarily qualifies the copula. But if we say, "Man is necessarily subject to decay," necessarily, according to the rule, may qualify either the copula or the predicate. Of course, "is necessarily subject to decay," and "is necessarily-subject to decay" only differ in demanding separate acts of attention. But still formal logic should have no place for ambiguities. Its notation ought to be perfectly *explicit*.

From these discussions we may conclude, that the ordinary logical notation is not free from ambiguity. In a strictly symbolical notation, such as Professor De Morgan proposes,* we might indeed have theoretical accuracy; but as long as we use the ordinary marks of quality and quantity, we must submit to a certain amount of departure from theoretical precision, and overcome the ambiguity consequent on the use of marks which are not univocal, by explaining the various senses in which such marks are used.

* 'Syllabus of a Proposed System of Logic.' Walton and Maberly, 1860.

All, for instance, the mark of universal quantity, has several meanings. Sometimes it stands for a collective Whole, as a regiment of soldiers; sometimes, for a whole of extension, either numerically definite, as, "All the men numbered 100;" or not numerically definite from being incomputable, as, "All men are mortal." Sometimes it has to express necessary and universal conjunction, as, "All figures involve space;" sometimes, a conjunction which is not proved to be necessary, though uniform as far as experience reaches, as, "All horned animals are ruminant." *Some* again, the mark of particular quantity, means either a definite number, as, "Some men are well known poets," and therefore their number is known; or it may mean an indefinite number, as in, "Bring me some (any number of) books."

The word *some* means also either definite objects, as in, "Some certain men excel in geology;" or indefinite objects, as in, "Some persons or other are sure to be convicted of theft during the course of the month." Of these two kinds of definiteness, namely, as to number and as to objects, seeing that the highest class of propositions, the necessary and universal, cannot be made numerically definite, the first seems to be unessential to the completeness of logic. Definiteness of objects, however, is indispensable in many instances, its absence often being a source of perplexity, since indefiniteness frequently implies either imperfect knowledge or incomplete expression. And, now, since it is no inconsiderable part of the province of logic to expose and obviate ambiguity, we shall proceed to show what the logical value of definiteness as to objects is.

A syllogism in the second Figure with affirmative premisses is, according to the rules of the Aristotelic logic, invalid, because the middle term is undistributed in either of the premisses. But now, let the predicate of each premiss be quantified, and rendered definite as to objects—if the quantity happen to be partial and not universal—and the syllogism becomes perfectly conclusive. Thus, the following quite a valid argument:—

The men who wear Lincoln-green uniforms are some certain of the rifle-men,

Jones is one of those rifle-men, therefore

Jones wears the Lincoln-green uniform.

Some certain is equivalent to *all*, with this additional meaning, that it is also the mark of partial quantity. It implies, in fact, that the term to which it is appended is part of a genus, but the whole of a species. Definiteness of objects in one remarkable instance, the conversion of the particular negative proposition, cannot be overlooked. "Some men are no poets" cannot, it is said, be converted simply, because the result would be a false proposition. Now, let us render the word *some* definite as to objects, as, "Some certain (viz., prosaic) men are no poets," and the terms can be transposed without any change of meaning, as follows, "No poets are some certain (viz., prosaic) men." Some certain being equivalent to all, as shown above, "Some certain men are no poets," is in reality a universal negative proposition, and as such simply convertible.

The sense in which we shall use the word *all* in the next part of this inquiry will be that—by far its most important sense—in which it expresses necessary and universal conjunction. And the sense in which we shall use the word *some* will be that in which, as the mark of partial quantity, *not-all*, it signifies the absence of universality, namely, contingency. For, as the word *all* stands for universal conjunction, the word *some* stands for less than universal, namely, partial or contingent conjunction.

Now, all such variations in the meaning of the marks of quantity and quality as we have here indicated, lead to ambiguity, and are so many drawbacks from what ought to be the absolutely univocal character of formal logic, drawbacks which must eventually be remedied by the adoption, if not of Professor De Morgan's "mysterious spiculæ," certainly of some system possessed of theoretical accuracy.

CHAPTER III.

CONCEPTION NOT COMPETENT TO SUPPLY THE DATA OF SCIENTIFIC TRUTH.

WE have now arrived at a very momentous stage of our inquiry, and one which we have constantly had in view, in the course of our previous exposition. We stand, as it were, on the confines of one region, and within view, as many maintain, of another. But some insist, that the region beyond is all illusion; that all our real knowledge is limited to that at the confines of which we have now arrived. All knowledge which pretends to be independent of experience is fictitious, must not be taken as vouching for the existence of aught beyond itself. If this be true, then all scientific truth, in other words, all universal affirmative propositions, are acquired by Conception with the aid of some of the secondary operations, especially association and imagination. For all general propositions, so far as we have yet seen in the course of this inquiry, are due to the operations of this faculty. Among these general propositions, universals alone constitute scientific knowledge. But how do these come to be regarded as necessary truths, *i. e.* the predications of necessary conjunction between one fact and another? The answer afforded is, that two facts uniformly observed, or thought of in union, are so securely welded by association, that the notion of the one cannot be dis severed from that of the other. A subjective necessary conjunction is induced between the one notion and the other; and this, by a law of objectivity, is imputed to the external conjunc-

tion. But this is no proof that one of the facts is necessarily conjoined to the other. For what we may know to the contrary, though uniformly united to it now, there may come a time when this shall not be the case. The conjunction may be contingent, although we have never met with an exception to the invariableness of it. Let the nature of the external conjunction then be what it may, the internal conjunction, if the former be *uniform*, grows so indissoluble, that it is felt to be a necessity. But if the external conjunction be *not* uniform, there is an obstacle opposed to the associating propensity, especially in informed and cultivated minds; consequently one fact is not inseparably linked in thought to another, and therefore the conjunction is pronounced contingent.

If, during every day and every hour of waking life a fact present itself to our notice in union with another; and if we have never heard, never read of an exception to this rule, how can we possibly conceive one to exist, more especially if we have no analogies on the model of which we could picture the nature of the exceptional case? Who for instance, can frame an idea of space, which has no space beyond? Who can form an idea of time to which there was no time prior, or will be no time posterior? Necessary conjunctions are therefore fully accounted for, without having recourse to speculations on the existence of occult mental agencies which manifest themselves only in their effects.

We are not conscious of having in the least understated the doctrine which we have here attempted to describe. We have even made an effort to believe it true. But consciousness does not favour its assumption of completeness; and denies that the region beyond Conception is nothing but an illusion. Consciousness teaches us that there are three originating faculties, Perception, Conception, and Reason; and that the last faculty has very important functions indeed to perform in the economy of the human mind, functions quite distinct from any which we have yet described, and

far superior. Take what view we may of the matter, we cannot discover that Conception does anything but perceive resemblance and non-resemblance, or in other words general facts. Blot Reason out of the map of the mind—and by Reason we do not mean that operation which expresses itself in the syllogism only—and there is no accounting for such notions as, causation, necessity, contingency, essence, and dependency. As to universals, they degenerate on such a supposition into spontaneous assumptions, their existence being attributed to a most fallible propensity, a propensity which is accountable for most long-standing errors and superstitions, a propensity which leads the mind to a belief in omens, apparitions, and the predictions of weather almanacs; and which rashly generalizes from the most casual coincidences. Now, it is the duty of every one who is enlightened on the point, to resist, rather than encourage, such a misleading tendency; and not to allow it to usurp an unrightful sway over his beliefs and opinions. If it be to such a fallacious propensity that we owe the conviction that certain truths are necessary and universal, better have no such conviction. Let the mind be free.

But after all, it is only such uniformities of conjunction as are most obvious, undisguised, and unquestioned, that can be so firmly fixed by association upon our convictions. "A truth necessary and universal," writes a profound writer in the 'Quarterly Review,'* "relative to any object of our knowledge must verify itself in every instance where that object is *before our contemplation*, and if at the same time it be *simple and intelligible* its verifications must be obvious." The italics in this quotation are our own. We wish to draw attention to the words so marked. What if any object be for the first time, or seldom before our contemplation; and what if it be *not* simple and intelligible? Are there no necessary and universal truths now on the

* June, 1841. Art., Whewell, "On Inductive Sciences."

point of discovery, and yet to be discovered? Will not these be seldom before the contemplation of man at first, and far from simple and intelligible? Must we wait till every such truth become a truism before association can generate that subjective necessity in subjection to which we call certain conjunctions among external facts necessary and universal? What, we repeat, according to this system, becomes of obscure and disputed uniformities; of those recently detected, and yet admitted by few; of those which, it is to be hoped, are yet to issue with abundant outflow from the prolific womb of events? Is it only when these have been popularized in our lecture-rooms, and taught in our schools, that they will gain that hold upon the mind which, according to the sensational school, is the sole reason why we call the truths of geometry, *e. g.*, necessary and universal? Better the system which divides universal truths into necessary and contingent, *à priori* truths, and those of observation and experiment, than that which accounts for the existence of truths of the former class by Conception aided merely by some of the secondary acts of consciousness.

But again, what light does inductive logic throw upon this question? It teaches that *inductio per enumerationem simplicem*, the only induction due to Conception when operating without Reason, is incompetent to establish universal truths, and has not infrequently been found at fault in attempting to do so. Now, what we humbly propose in the next part of this inquiry is to place on record what seems to us, an extension of inductive logic; to account for the genesis of necessary and universal truth, in strict accordance with the *à posteriori* method, but that method carried beyond its present limits; to shew that from a single instance of conjunction, viewed in a positive and negative light, we can legitimately infer necessary and universal conjunction; to point out how the chasm which has hitherto yawned between the rival schools of Bacon

and Locke on the one hand, and of Descartes and Kant on the other, may be filled up, and the rivalry brought to a close; and to indicate how the *inductio per enumerationem simplicem* of Conception may be anticipated in many important instances, and may most confidently be expected to verify such necessary anticipation, with unfailing uniformity, as long as this Cosmos endures.

PART III.

OF REASON AND ITS FORMS.

"We are not solicitous about such useless things as depend upon opinion; but, on the contrary, resolve to try whether we can lay any firmer foundations of the human power and greatness, and enlarge the bounds thereof."—*Bacon*, '*Novum Organum*.'

"In these two things, viz., an equal indifferency for all truth (I mean the receiving it in the love of it as truth, but not loving it for any other reason before we know it to be true); and, in the examination of our principles, and not receiving any for such, nor building on them, until we are fully convinced, as rational creatures, of their solidity, truth, and certainty, consists that freedom of the understanding which is necessary to a rational creature, and without which it is not truly an understanding."—*Locke*, '*The Conduct of the Understanding*.'

CHAPTER I.

PRELIMINARY REMARKS.

The Meaning attached to the word Reason in this Inquiry—Chief Schools of Reasoning—Constitution of Reason—Division of Reason.

The meaning attached to the word Reason in this Inquiry.—Before commencing an analysis of Reason, it may be well to point out in what sense we use the word. According to Sir Wm. Hamilton, a high authority in such matters, it has been very commonly employed, both in ancient and modern times, to signify our intelligent nature in general. In this signification, to follow the Aristotelic division which Sir Wm. Hamilton gives, it comprehends—1. Conception, or Simple Apprehension; 2. The Compositive and Divisive process, Affirmation and Negation, Judgment; 3. Reasoning, or the Discursive Faculty; 4. Intellect, or Intelligence proper, either as the intuition, or as the place of principles or self-evident truths.*

According to the same authority, it has often been employed, also, to denote the third and fourth functions enumerated above, Reasoning and Intelligence proper. Reid, for example, in his later works, states that Reason in its first office or degree is identical with Common Sense, the intuition of self-evident truths; in its second, with Reasoning or the Discursive faculty.

Reason in this inquiry is employed to denote the third and

* Edition of 'Reid's Works,' p. 768.

fourth of the special functions mentioned above, not, however, as distinct functions, but as one and the same function. In fact, we sink the fourth function, Intelligence proper in the third, and derive first principles from that alone. As we proceed, it will be found that it was scarcely optional with us to avoid the innovation which we have here announced, because it will, we think, appear to be quite an arbitrary distinction, to ascribe the origin of first principles to Reason as to a non-infering faculty, and to class all processes of inference under the head of Reasoning as a separate function. Reason in this inquiry then is used to denominate the third originating faculty. We call the faculty itself Reason; and we call its operation reasoning. In no instance have we been able to discover that Reason has an intuitional agency, that it is direct, immediate, presentative, or non-infering, in its cognition of truth. This denial of the function usually ascribed to Reason in its higher manifestation, throws upon us the *onus* of proving how universal truths are obtained, if Reason be not endowed with an intuitional power. Human observation, it is rightly urged, is limited; it has never yet sufficed to verify a universal truth. Generalize a fact to the utmost extent that a far-reaching imagination will enable you to do so, and you are still but impotently straining to exhaust the illimitable. If, then, such truths be not intuitively apprehended, how is it possible to obtain them? We answer, not by generalization from experience, and yet not by an intuition of Reason.

Chief Schools of Reasoning.—By way of facilitating an approach to the question before us, and getting at the gist of it, it will be well, in the first place, briefly to enumerate the principal accounts which have been rendered of the process of inference.

Reasoning is not infrequently divided into inductive and deductive, into reasoning from particulars to generals, and from generals to particulars. The first has been said to be the method of reasoning in the region of contingent truth, truth discovered by observation and experiment: the

second, the method of reasoning in the region of necessary truth, the mathematical and moral sciences.

Some logicians, however, of the school of Aristotle maintain that the Syllogism is the type of all reasoning; and that induction, in so far as it is a process of inference, must be capable of reduction into the syllogistic form. Thus, if we conclude from observing that some animals deficient in upper cutting teeth ruminant, that all animals similarly deficient do the same, we do so, because we have abiding in the mind as a major premiss—which observation has been the occasion of eliciting, but has not originated—the conviction, that whatever is true of the animals which we have observed, is true of the whole class to which they belong.

Other logicians maintain, in opposition to this doctrine, that all reasoning is inductive. All inference essentially consists in concluding from certain known particulars what certain unknown particulars will be. For instance, it is commonly inferred that if a certain remedy cures John, James, and several others, it will also cure Mary. The same ground, however, which guarantees an inference from particulars to particulars, warrants a conclusion from particulars to a general proposition. This general proposition we may then use as a register of past inference; but it is in no sense an essential element of proof. It serves the purpose of satisfying us that a particular inference in any given instance is correct, because it has previously been arrived at as a portion of the general conclusion, which registers the fact. To make this general proposition an essential element of the proof, is, they contend, a *petitio principii*. "No reasoning from generals to particulars, can, as such, prove anything: since from a general principle you cannot infer any particulars, but, those which the principle itself assumes as known."*

* Mill's 'System of Logic.' Third Edition, p. 205.

Having now afforded a brief sketch of the chief opinions held by logicians as to the nature of reasoning, we may proceed, with increased facility, to communicate the result of our own investigations in this field.

Constitution of Reason.—Reason, as appears to us, is that faculty which cognizes a new truth by comparing together two propositions, having a certain relation to each other. As by Perception and Conception we compare term with term, so by reasoning we compare proposition with proposition, and state the result in a third proposition, called the conclusion.

Division of Reason.—We divide Reason, in the first place, into Reason in the Whole of Comprehension, and Reason in the Whole of Extension. Our present concern is with the first division, which forms the burden of the next chapter.

CHAPTER II.

REASON IN THE WHOLE OF COMPREHENSION EXAMINED.

REASON IN THE WHOLE OF COMPREHENSION—Reason in this Whole is Inductive—Of Singular Induction, showing how its Form is Detected—Chief Function of Reason—Ambiguity of the Phrase Necessary and Contingent Truth—The Form of Singular Induction—Syllogizing in the Whole of Comprehension—The Function of Singular Induction in Relation to Perception and Syllogizing.

Reason in this Whole is Exclusively Inductive. It brings in new truth into the treasury of the mind. It is divided into the cognition, 1, of necessary, 2, of contingent conjunction, which cognition we have decided upon calling Singular Induction; and into the cognition of the conjunction of two terms by a middle term, or Syllogizing.

We shall, in the first place, treat of Reason generally in the Whole of Comprehension; in the second place, of Singular Induction; and in the third place, of Syllogizing in the same Whole.

Reasoning, in the first instance, is in the Whole of Comprehension. Like Perception, it cognizes its objects as isolated from each other. It has no power of generalization, or of combining individual inferences into a class, and expressing them in a single proposition. To do this, is the function of Conception, which performs the same uniting policy for Reason that it does for Perception. All reasoning, then, in the first instance, reasoning apart from Conception, must have singular premisses, and a singular conclusion. What do we gather from this fact? That the *dictum de omni et nullo* is not the foundation of all argu-

ment. Since ratiocination is a descent from generals to particulars, ratiocination is not the first step in reasoning. What, on the other hand, becomes of Induction, if that be an inference from particulars to particulars, or even from one particular to another? We have at the root of all reasoning nothing but isolated singulars, standing like so many piers of a bridge, aloof from each other, waiting for the superstructure that is to unite them; singulars which warrant no inference whatever from this instance to that. All reasoning from one particular to another presupposes Conception, which conceives the second as precisely similar to the first, but can only do this in so far as it has a warrant for doing so; which warrant can be nothing less than a universal proposition. In the absence of such a universal the inference can only be probable.

Of Singular Induction, showing how its Form is obtained.

We see a statue resting on a pedestal. All that we perceive in this simple fact, relevant to the subject under discussion, is, that the statue is situated above the pedestal, and the pedestal below the statue, and that they are in contact. Lo! the pedestal is removed, and the statue falls. In this fact, all that we perceive again is, that the removal of the pedestal is followed by the fall of the statue, mere antecedence and consequence of events. But somehow we have a conviction that the pedestal supported the statue. Whence this notion of support, of the pedestal as being necessary to the permanence in its place of the statue? Perception does not afford it. The only relevant idea supplied by that faculty previously to the fall of the statue, was the relation in place which the statue and the pedestal bore to each other. And the only relevant ideas, elicited by the fall of the statue contemporaneously with the removal of the pedestal, were merely antecedence and consequence of events. How then do we obtain the notion of the necessary conjunction which existed between the statue and the pedestal? By comparing

together the circumstances preceding the fall of the statue, with those attending the fall itself. This comparison is reasoning, and answers to the description of Reason which we have given above, but more especially, constitutes that kind of reasoning which we have styled Singular Induction. The explicit and symbolical statement of an instance of Singular Induction exhibits the Form of which we are in quest.

Chief Function of Reason.—We have here to draw attention to an important fact. In the second part of this inquiry, we remarked that Perception is the faculty which cognizes a Whole as possessed of such and such attributes, &c. Now, the leading fact herein to be noticed, is conjunction of Whole and part, or to state the same more simply yet, the conjunction of one thing with another. All that Perception is competent to take note of in this is, that it is a conjunction of an indefinite character, a matter of fact or historical conjunction. Now, it is possible to ascertain the exact nature of this conjunction; and this is the chief function of Reason. Reason discovers whether it be separable or inseparable, contingent or necessary in its character.

Ambiguity of the Phrase, Necessary or Contingent Truth. What we understand by a necessary truth is a proposition which asserts inseparable conjunction between one thing and another; and by a contingent truth a proposition which asserts a separable connexion between one thing and another. But some understand by the phrase, that a proposition is clearly known to be true when it is necessary, and is not clearly known to be true when it is contingent. Thus, Mr. Lewes says:—"I conceive no distinction whatever can be made between truths which are necessary, and truths which are contingent. All truth is necessary truth. . . Truths are nothing but perceived relations; some of these relations are so simple, or so universally presented to our experience, that we cannot con-

ceive them to be otherwise; and thus no freak of thought will enable us to conceive fire not burning, two and two making five, or parallel lines enclosing space; while other relations are so complicated, or so unfamiliar, that we very easily conceive the possibility of their being otherwise. . . . All truths are seen to be necessarily true, if they are seen to be true at all; and the character of contingency is not applicable to the relations expressed in certain formulas, but solely to the modes in which we got at those formulas; the contingency of 72 and 140 making 212, is the liability of our miscalculating; and the proposition is a contingent one, until we have so checked our calculations as to be certain we have ascertained the true relations.”* In these remarks, Mr. Lewes clearly confounds necessary or contingent conjunction between one fact and another, with perfect accuracy of knowledge, or the possibility of inaccuracy. Admit consciousness to be veracious in its deliverances, then all *truths*, whether necessary or contingent, are necessarily true. But all conjunctions between one fact and another are not necessary, for some are contingent. It is necessarily true that two and two *must* make four; and it is no less necessarily true that there is only a contingent connexion between a man and his money. It is only possibly true, that there is a necessary conjunction between the possession of incisor teeth and being carnivorous; but this does not constitute the conjunction a contingent one. If we cannot prove it by Induction to be either necessary or contingent, it is to us an unascertained conjunction; and as such possibly, a necessary one. We must sum up then, by saying, that we *know as perfectly*, that the connexion between a man and his name is merely contingent, as we know that that which exists between fire and burning is necessary and universal.

* ‘Biographical History of Philosophy.’ Library Ed. Parker and
p. 563-4.

The Form of Singular Induction.—This is of two kinds, the explicative and the ampliative. The first begins with the co-existence of this circumstance with that, and watches or effects the non-existence of the first circumstance in order to ascertain the result. The ampliative commences with the non-existence of either circumstance, and effects the existence of the first, in order to discover the result; in other words, *the first condition in explicative Induction, becomes the second condition in ampliative Induction.* In the one, we observe more than we experiment. In the other we experiment more than we observe. These two kinds of Singular Induction are divided into the formulæ given below.*

* *Formula of Singular Induction.*

1. Formula for Necessary Conjunction in Explicative Induction.

The existence of this A is attended with the existence of this B :

The non-existence of the same A is attended with the non-existence of the same B, therefore

The existence of this A is necessary to the existence of this B.

(Let us now, for the sake of brevity, substitute the sign *plus* for "the existence of;" and is *plus* for "is attended with the existence of;" the sign *minus* for "the non-existence of;" and is *minus* for "is attended with the non-existence of;" is for "is necessary to;" and *is not* for "is not necessary to.") We then have:—

2. For Contingent Conjunction in Explicative Induction.

plus This A is *plus* this B :

minus Same A is not *minus* same B, therefore

plus This A is not *plus* this B.

3. For Necessary Conjunction in Ampliative Induction.

minus This A is *minus* this B :

plus Same A is *plus* same B, therefore

plus This A is *plus* this B.

4. For Contingent Conjunction in Ampliative Induction.

minus This A is *minus* this B :

plus Same A is not *plus* same B, therefore

plus This A is not *plus* this B.

Each of these varieties of Singular Induction is again divisible into two, to suit two distinct kinds of conjunction, viz., co-existence, and

We have now briefly examined one division of Reason in the Whole of Comprehension, and indicated how it might be formally developed in a complete system of logic. The remaining division of Reason in this Whole is Syllogizing.

antecedence and consequence. This gives us eight formulae. But so slight is the difference between one formula and another, that it will be quite sufficient, we think, in what aims to be nothing more than a tributary and suggestive work, to write out one only in each of these conjunctions.

Previously to stating the formula for these conjunctions, however, it is necessary to remark, that there are in nature two kinds of uniformity, statical and dynamical, uniformities of co-existence, and uniformities of sequence. As an illustration of what we mean, we quote from Mr. Morrell the following remarks on the system of Leibnitz. "It was the clear insight which Leibnitz had into the insufficiency of the Cartesian idea of Substance, that led to his divergence from that school. Substances being regarded by the Cartesians as a fixed reality, as *the absolute*, philosophy was reduced to a kind of geometrical process, that sought to discover all the possible *modi* it might assume. Leibnitz, warned by the results of Spinozism, reasoned through the rigid idea of extension and impenetrability, up to that of *force*; and by introducing this notion, brought the study of nature to the form of *dynamics*, instead of leaving it in the form of abstract geometry."*

The axioms and definitions of geometry are truths of the statical kind. All such truths are a statement that a Whole embraces certain essential parts. That Perception is a Whole containing two essential elements, viz., the cognition and the object, is a truth of this class.

Truths of the dynamical kind state that one set of circumstances necessarily antecedes another circumstance or set of circumstances. By the antecedent set of circumstances, that which is necessary to what follows, or the cause, we must understand, at least, a dual combination of facts. A thing does not act upon itself, except it be that one part acts upon another part. The tip of a finger does not act upon itself. Identity does not act upon Identity.

Then it is worthy of notice, that sometimes one of the antecedents is the more noticeable recipient of the effect. Sometimes both antece-

* 'History of Modern Philosophy.' Second Edition. Vol. i, p. 222, te.

Syllogizing in the Whole of Comprehension Examined.—It is usually taught that the Syllogism is deductive. In the Whole of Comprehension it is akin to Induction. It brings fresh knowledge into the mind; it does not bring particular instances out of the treasury of knowledge as in

dents conjoined are the obvious recipients of the effect; they are mutually modified by their action upon each other.

Formula for Necessary Co-existence in Explicative Induction.

This A is part of this A B:

minus Same A is *minus* same A B, therefore

This A is an essential part of this A B.

We must here explain that we use the words *this*, *same*, &c., in these formulæ in compliance with rule 3, p. 101.

Formula for Necessary Antecedence and Consequence, or Cause and Effect, in Explicative Induction.

plus This A with this B is *plus* this C:

minus Same A with same B is *minus* same C, therefore

plus This A with this B is the cause of this C.

The recipient of C, the effect, may be either one of the antecedents as B, or both as A B.

The eight formulæ are again to be modified as occasion demands to suit the following varieties of Induction, in each kind of reasoning, viz., explicative and ampliative; and in each kind of conjunction, viz., necessary and contingent; viz., the Method of Residues, and the Method of Concomitant Variations.

The Formula of the First Method is:—

plus This A B C is *plus* this D E F:

minus Same A B C is *minus* same D E F:

But by former Inductions,

plus any B is *plus* any E:

and

plus any C is *plus* any F, therefore

plus The above A is *plus* the above D.

The Formula for the Second Method is:—

plus This A is *plus* this B:

minus $\frac{1}{10}$ Same A is *minus* $\frac{1}{10}$ same B, &c.:

plus $\frac{1}{10}$ Same A is *plus* $\frac{1}{10}$ same B, &c., therefore

plus $\frac{1}{10}$ Same A is *plus* $\frac{1}{10}$ same B.

And by Universalization, which will be explained below (p. 95.)

plus The above A is *plus* the above B.

Deduction ; on the contrary, it helps to fill that treasury. But what is the new knowledge which we gain by the Syllogism in this Whole? In order to answer this question, it is essential to bear in mind that terms in this Whole are to be regarded as strictly singular. By regarding them thus, we shall not be embarrassed by any considerations touching their quantity, as is the case in the Whole of Extension. And this is quite a legitimate procedure, because of the priority in logical order of the Whole of which we are now treating. To examine the Syllogism in the Whole of Comprehension seems to us to reveal its nature more clearly than by merely regarding it in the Whole of Extension, as has generally been done. But we do not profess to do more than open an investigation in this direction by contributing a few hints.

The Whole of Comprehension, be it remembered, is prior in logical order to the other Whole. It consequently follows that whatever properties the Syllogism is discovered to possess in the prior Whole, it must retain the same in the succeeding Whole. We must look upon a syllogism in the Whole of Extension, say, one in *Barbara*,* as merely a multiplication by Conception of so many singular syllogisms ; and we must bear in mind that Conception in no sense alters the propositions forming it, otherwise than by making them plural or by giving them their extent, in addition to their previous attributes. Now, what we have to do at present is, to examine the Syllogism in regard to the content of the terms, entirely abstracting attention from the extent of the same.

We now recur to the question with which we started :— What is the new knowledge which we gain by the Syllogism in this Whole? And let us, for the sake of brevity, as well as perspicuity, confine our remarks to syllogisms, with affirmative premisses. By the Syllogism we know that two

* All animal life is organic life,
All men possess animal life, therefore
All men possess organic life.

terms, both of which are joined to a middle term, are joined by that middle term to each other. A whole or subject may contain a part or predicate, which part, as a whole, contains also a part of its own; this constitutes the first figure. Two wholes may contain one and the same part; this constitutes the second figure. One whole may contain two parts. This constitutes the third figure.

These figures may be expressed in symbols, thus:—

First Figure.	Second Figure.	Third Figure.
A is <i>b</i>	A is } <i>c</i>	A is { <i>b</i>
B is <i>c</i>	B is }	{ <i>c</i>
∴ A is <i>c</i>	∴ A is B	∴ What is <i>c</i> is <i>b</i> .

The capitals stand for wholes; the small letters for parts of those wholes.

The principal use of the first figure, seems to be, to show the dependence, say, of tertiary elements upon primary, through the medium of secondary. Suppose, that,

The earth rests on an elephant, and

The elephant rests on a tortoise, then,

The earth rests on the tortoise.

The principal use of the second figure seems to be, to prove identity. Thus:—

Timothy Hardcastle answers precisely to a certain description,

Anthony Truelove answers precisely to the same, therefore

T. H., is an *alias* for A. T.

The chief use of the third figure seems to be, to prove that two things co-exist, through their co-existence with a third. Thus:—

Brown informs Jones that he, Brown, was at L— at a certain time,

Brown also informs Jones that he had a pull on the lake at the same time, therefore

Jones is led to infer (supposing that he is ignorant of the fact) that there is a lake at L—.

It has been usual to hold that the second figure must have a negative premiss. In the Whole of Comprehension, it clearly appears, that two wholes containing one and the same part form a combination which constitutes a valid syllogism in this figure. Even when two wholes contain resembling parts only, we can infer resemblance. The axiom:—Things which are equal to the same thing are equal to each other, falls naturally into the second figure, as for instance:—

The things $\left\{ \begin{array}{c} A \\ B \end{array} \right\}$ equal c; therefore,

A equals B, and the converse.

From this it seems, that inferences from resemblance must be considered as of a peculiar nature forming a separate class. Resemblance, be it remembered, is cognized by Conception, the faculty to which we owe the Whole of Extension. Resemblance is, therefore, removed out of the present whole. We thence conclude, though with considerable diffidence, that the axiom:—Things which are equal to the same thing, &c., is the Canon of a species of inference which is separate from every other, and can only be generically included in the Canon which applies to all syllogistic inference in this Whole, namely, *That two terms, both joined, or the one joined, and the other not joined to a middle term, are by that middle term joined or not joined to each other, as the case may be.*

It is usually taught that the minor premiss in the first figure must be affirmative. In this Whole there is no reason for this restriction, for either premiss may be negative. Now, since the Whole of Comprehension is prior to the Whole of Extension, no rules should obtain in the latter which are not in harmony with every inference which is legitimate in the Whole which is logically prior to it.

What is required to prevent an illicit process of the major in the following Syllogism is supplied by the correction, a
uped. Thus:—

All quadrupeds are animals,
 A Bird is not a quadruped ; therefore,
 a quadruped
 It is not animal.

^

Here it is necessary to remark that Syllogizing in the Whole of Comprehension simply proves in syllogisms with affirmative premisses, that the two terms of the conclusion are joined merely as a matter of fact. The singular Syllogism does not prove necessary conjunction between the one term and the other without the aid of Singular Induction.

The Function of Singular Induction in Relation to Perception and Syllogizing. First in relation to Perception.

If we say that two and three make five, we have a truth founded on the evidence of Perception ; and this evidence is paramount as to the fact that two and three make five. But Perception does not, and cannot, reveal to us that two and three *must* make five. This is the office of Reason, Singular Induction, but Induction implicitly operating, of which more bye and bye. Again, that a Whole is greater than its part, is a fact cognized by Perception alone ; but that a Whole *must* be greater than its part is known to Reason only.

In the second place—to treat of the office of Singular Induction in connexion with Syllogizing—when we say that John is in the house, because he is in the parlour, we infer a matter of fact conjunction, we conclude all that Syllogizing alone authorises us to conclude. But if we say John is necessarily in the house, because he is in the parlour, we give utterance to a necessary conjunction ; and such a conjunction can be apprehended by Singular Induction alone. We come to the conclusion, therefore, that Singular Induction operating upon Perception affords us necessary immediate conjunctions ; and that two such conjunctions combined in a syllogism afford necessary conjunction of two terms by a middle term.

It will be discovered from this fact *that Singular Induction is the dominant operation of Reason ; that to it we owe the foundation of all scientific truth, for it alone is cognizant of necessary conjunction.*

Here ends our search into the nature of Reason in the Whole of Comprehension. We must, in the next place, survey the domain of Reason in the Whole of Extension.

CHAPTER III.

REASON IN THE WHOLE OF EXTENSION EXAMINED.

REASON IN THE WHOLE OF EXTENSION—Reason in this Whole both Inductive and Deductive—Law of Universalization—Canons of Reasoning—The Cardinal Law of Nature—Rules of Induction Proper—Syllogizing in the Whole of Extension—The Transition from Inductive Reasoning to Deductive—Use of Deduction—Canon of Scientific Deduction—Objections to the Syllogism Removed.

Reason in this Whole is both Inductive and Deductive.

We must, in the first place, continue to prosecute our inquiry into the nature of inductive logic, before we shall be in a position to treat of the remaining division.

We have indicated above how necessary truths are arrived at, and we have also pointed out how Perception and Syllogizing are complemented by Singular Induction in order to make the knowledge obtained by them more than merely historical. Having now to treat of Reason in the Whole of Extension, our next task will be to show, how necessary truths become universal.

Law of Universalization.—We have been constrained to introduce this new term into our inquiry, because the word generalization does not convey the meaning which we have in view. The latter term, too, bears a signification which it is important to distinguish clearly from that of the new term which we have here been obliged to adopt. By generalization, we understand the process by which Conception enlarges its field of view. By universalization, we mean the conjoint operation of Reason and Conception in their en-

than mere individual, and perhaps morbid, peculiarities of thought.

There is a seeming, but only a seeming exception to what is here advanced; and it is mentioned with a view of paving the way to one of the most important facts within the whole range of psychology. Precious truths are mostly discovered by a single inquirer. Such truths are accepted, perhaps, at first, by a few only. But truth is truth, whether received by few or by many. Its non-reception in no way affects its genuineness. Now, such truths do not flow from the strict individuality of the inquirer's mind, but from its catholic character, from consciousness as the truth-standard; and, therefore, claim recognition from all men who are made familiar with them. From this discussion we gather, that private judgment or thought is inferior in authority to the consentient thought of many; but that a deliverance of consciousness as the truth-standard, though originally emanating from but a single mind, is supreme, for it is indeed equivalent to the accordant voice of *all* men.

Canons of Reasoning.—Every distinct kind of reasoning has its Canon. Such Canon is a universal truth, embracing all the examples of reasoning to which it applies, and guaranteeing their validity.

The so-called necessary and universal laws of thought known as the law of Identity, the law of Contradiction, and the law of Excluded Middle, are not primary as usually taught, but presuppose Singular Induction and Universalization. Being necessary and universal truths they are arrived at in the same manner as are all other truths of that class. After the most diligent search we fail to discover any primary law of necessary and universal truth except that which is propounded as such in this inquiry.

We now proceed, in the first place, to state:—

The Canon of Singular Induction.

If the existence of any circumstance is attended with the existence of another circumstance:

And the non-existence of the first circumstance is attended with the non-existence of the second :

Then, the existence of the first circumstance is necessary to the existence of the second.

This Canon is written to suit necessary conjunction. For contingent conjunction, it must be written as follows:—

If the existence of any circumstance is attended with the existence of another circumstance :

And the non-existence of the first circumstance is *not* attended with the non-existence of the second :

Then, the existence of the first circumstance is *not* necessary to the existence of the second.

From this Canon, in its twofold aspect, we derive by Universalization :—

THE CARDINAL LAW OF NATURE.

Every conjunction between one entity and another entity is either necessary or contingent.

Although reasoning in the Whole of Comprehension is competent to supply us with conclusions which warrant universalization from them, yet perhaps the majority of inductive inferences are obtained by the joint operation of Singular Induction and Conception, or Induction proper. Not infrequently, too, as we shall have occasion to show further on, they are procured by inductive reasoning of a crude or half-developed description. These inferences, to be valid, must be in accordance with the following rules :—

Rules of Induction proper drawn from the Canon of Singular Induction.—From the positive part of the Canon, exclusive of the negative part, namely, “ If the existence of any circumstance is attended with the existence of another circumstance,” follow these two rules :—

1. If the existence of any circumstance is *not* uniformly attended with the existence of another circumstance, the first is not necessary to the existence of the second.
2. If the existence of any circumstance is uniformly

attended with the existence of another circumstance, the first *may possibly* be necessary to the existence of the second.

Obs.—This last is the Induction of the ancients, “*inductio per enumerationem simplicem, ubi non reperitur instantia contradictoria*,” as it was named by Bacon. To it we owe a knowledge of many of the most evident laws of nature. It does not prove: it merely affords *prima facie* evidence.

We may here remark, that there are truths, coextensive with human experience, which are not regarded as all of the same description. Thus, “All snow is white,” and “All crows are black” are recognised to be very different from such truths, as, “Two straight lines cannot enclose space,” or “Things which are equal to the same thing are equal to one another.” Oppose “Some snow is not white,” and “Some crows are not black” to the two former propositions, and the contradiction does not seem to be very palpable. But oppose their contradictories to the latter two propositions, and it is seen at once that such contradictories cannot be true. Why is this? Because the former are received on the evidence of *inductio per enumerationem simplicem* only: the latter, though implicitly, on the evidence of a full induction, that is, induction answering to the Canon. But this is only a partial explanation of the difference, there must be a further reason for it, which seems to be this:—We may think of snow reddened with blood, or of a crow with its feathers bleached, without destroying the notion which we entertain of these objects. But we cannot think of two straight lines enclosing space, without destroying the notion of a straight line altogether. Tried by the formula of coexistence in Singular Induction, it will be found that white, as usually thought of in connexion with snow, is not a necessary quality. It is quite possible, it is true, to change the point of view, and regard the word “snow” as connoting “white,”

which then becomes an essential quality. It is rarely, however, that the mind takes this view of it.

Now, the other two truths, when tried by the formula of coexistence, are discovered to have their predicates inseparably attached to them. Each predicate is an essential part of the Whole of which it is predicated, and does not, therefore, admit of being regarded as separable from it.

This distinction between truths which are equally coextensive with human experience, affords the reason why some are recognised to be universal, and others are not. All the testimony in the world, falling far short, as it does, of universality, cannot establish the proposition "All crows are black, and can be of no other colour," as long as men *can* imagine a crow of any other hue than black, without being compelled to unthink the notion which they possess of that bird. On the other hand, no amount of testimony can convince men that some circles are not round, or some fire not hot, or some ice not cold, as long as they *cannot* imagine such to be the case, without being compelled to unthink the notion which they possess of these objects.

From the negative part of the Canon:—"And the non-existence of the first circumstance is attended with the non-existence of the second circumstance," follows, in the first place, from the words "first circumstance," and "second circumstance—" meaning those, and no other, mentioned in the positive part of the Canon—the very important rule:—

3. That the medium through which the comparison of the positive and negative conditions of the Canon is effected must at the outset be strictly *one*.

Obs.—This rule is complied with in all the formulæ of Singular Induction given above.

It is by the non-observance of this rule that the judge in Macaulay's anecdote was enabled, after dinner, to propound "a theory, that the cause of Jacobinism was the practice of bearing three names." Had Macaulay been

aware of this rule he would scarcely have committed himself so far as to say :—" Here is induction corresponding with Bacon's analysis, and ending in a monstrous absurdity. In what then does this induction differ from the induction which leads us to the conclusion that the presence of the sun is the cause of our having more light by day than by night? The difference evidently is, not in the kind of instances, but in the number of instances." The difference, we presume, consists in the fact, that in the one instance, the 3rd rule is by all men virtually observed; while in the other instance, it was most grossly violated. Macaulay's criticism merely lays bare the inadequacy of Bacon's analysis. It is a very erroneous estimate of Induction *as it is*.

From the 3rd rule follows the rule :—

4. That the next approach to one medium of comparison is, when the positive and negative parts of the Canon are compared through two media which exactly resemble each other.

Obs.—Before an inference according to the 4th rule can be deemed conclusive, the 1st and the 6th rule must be observed, in order to ensure the elimination of all unessential circumstances. There must also be a deduction from the Cardinal Law of Nature, namely, that when all unessential circumstances or contingent conjunctions are eliminated, the remaining conjunction or conjunctions must be necessary.

From the 3rd rule also follows the rule :—

5. That where there is neither one medium nor two resembling media of comparison, there can be no inference.

Obs.—It might appear to many, because the premisses and the conclusion happen to be true, that the following induction is valid, which is not the case :—

The existence of a brain in man is attended with the existence of intellect :

The non-existence of a brain in a mollusc is attended with the non-existence of intellect; therefore

The existence of a brain in man is necessary to the existence of intellect.

The easiest method of exhibiting the fallacy of this reasoning is to frame an induction of a similar kind, which is glaringly false, as for instance :—

The existence of warm clothing is attended with the existence of cold in polar regions :

The non-existence of warm clothing is attended with the non-existence of cold in tropical regions ; therefore,

The existence of warm clothing is necessarily attended with the existence of cold in polar regions.

The invalidity of these inductions arises from a non-observance of the 4th rule. The media of comparison are not precisely similar.

If two media are not exactly similar, yet if the comparison is made through that in which they resemble, the induction to that extent is valid.

There is also an induction according to the Method of Concomitant Variations, in which a comparison is instituted through a plurality of media, instead of through one medium, as in the formula of that method, exhibited above. The formula of such an induction is the one given below.*

By complying with the 1st and 6th of these rules, in order to ensure the elimination of unessential circumstances ; by

* *A Formula of Induction according to the Method of Concomitant Variations.*

plus A^{1st} is plus B^{1st} :	} which im-	{	minus $\frac{1}{10} A$ is minus $\frac{1}{10} B$:
plus $\frac{9}{10} A^{2nd}$ is plus $\frac{9}{10} B^{2nd}$:			Therefore,
			plus $\frac{1}{10} A$ is plus $\frac{1}{10} B$.

This kind of induction is accomplished by means of a chain of media of comparison bearing less and less resemblance to the first medium in a descending series, thus :—

plus A^{1st} is plus B^{1st} :	} and so on throughout the series.
plus $\frac{9}{10} A^{2nd}$ is plus $\frac{9}{10} B^{2nd}$:	
plus $\frac{8}{10} A^{3rd}$ is plus $\frac{8}{10} B^{3rd}$:	
plus $\frac{7}{10} A^{4th}$ is plus $\frac{7}{10} B^{4th}$:	
&c. &c.	

comfortably by his fireside. Some one comes in, and informs him that it rains. He knows that all rain wets, therefore, he knows that the rain which is then falling wets, without going out to ascertain whether it do or do not. Deduction, therefore, in its simplest form, is the act of unfolding the contents of a general proposition of definite quantity. Scientific Deduction, however, is the act of unfolding the contents of universal propositions only. To this kind of Deduction, because of its pre-eminent importance, we shall confine our remarks.

Use of Deduction.—Its use is to obviate the necessity of constantly recurring to Singular Induction, or subsequent processes of reasoning, to prove every new case of necessary conjunction. Let a necessary conjunction be legitimately inferred, and we are warranted to proceed from it to a universal conclusion. All, therefore, that is necessary afterwards, in order to ascertain a particular instance of necessary conjunction between one thing and another, is to show that such conjunction is contained in a universal proposition. If we have to ascertain a mediate necessary conjunction deductively, we must have recourse to the Syllogism in the first figure. The same, however, can be ascertained, it is important to remember, by the singular Syllogism in the same figure, with necessary propositions for the premisses. The deductive Syllogism, consequently, is only one means of revealing such a conjunction. It is a summary, in short, of the several singular Syllogisms which it contains, and a compendious contrivance for making known many necessary mediate conjunctions at once.

Canon of Scientific Deduction.—This is virtually the *dictum de omni et nullo*, and runs thus:—Whatever is asserted in a universal proposition may be asserted with certainty of any instance which it, (1) *immediately*, (2) *mediately* contains.

First, immediately.—When we use the universal as a register of the truth of a particular immediately embraced, we

do not require the Syllogism. This use of universals is two-fold. In the first place, if we observe a single fact we cannot know that another is necessarily connected with it, except it be so connected with it in a universal proposition with which we are acquainted. Let the single fact be smoke. Then, all smoke indicates fire, therefore, this smoke must indicate fire. In the second place, if we observe two facts joined together, we can only know that one of them is necessarily joined to the other, if no induction take place, through their being so joined in a universal with which we are familiar. Let the two facts be thunder and lightning. Then, all thunder is preceded by lightning, therefore, this thunder *must* have been preceded by the lightning.

Secondly, mediately.—When we use the universal to ascertain the truth of a particular mediately contained, that is, contained in something else which is contained, we must have recourse to the Syllogism in the first figure. For instance :—

All animals are organic beings,
All men are animals ; therefore
All men are organic beings.

Organic Being denotes, or contains Man in its extension, *mediately*, that is, Organic Being denotes Animal, which denotes Man, therefore, Organic Being denotes Man. In the Whole of Comprehension, this would be explained generically by saying, that Man is joined to Organic Being by Animal as the middle term ;* but, to be more particular, by, saying that, Man, as a whole of comprehension, connotes Animal, which connotes Organic Being. Man, therefore, connotes Organic Being *mediately*.

Objections to the Syllogism removed.—It appears to us that it is partly from overlooking the distinction between immediate conjunction and mediate, between “*homo, animal,*” and “*homo (animal) vivens ;*” partly from overlooking the

* See the Canon, p. 92.

difference between matter of fact conjunction, and necessary and contingent conjunction; and partly from the denial of universal propositions, that so many have thought the Syllogism a useless encumbrance.

In the first place, let us show that mediate conjunction has been confounded with immediate. Thus, if we catch John sinning, it is not necessary to prove by syllogism that he is a sinner, for we perceive that he is one. If you insist that he is a sinner, because all men are sinners, the *à posteriori* philosophers will reply, that you can know that to be the case by observation alone; and that there is the same evidence to show that John is a sinner, as there is to prove that all men are sinners; that, consequently, since the general proposition is established precisely in the same manner as a particular instance, the particular instance when resting on the testimony of perception is better attested than when it is merely concluded from the general proposition. Supposing the testimony of perception to be wanting in some particular instance, you may, in that case, deduce from the general proposition the particular instance required. Thus, we deduce from the proposition, "All men are mortal," that Lord Brougham will die. The general proposition, as the register of past experience, enables us to predict (and prediction is the chief use of deduction), but its testimony is entirely superseded when we have the evidence of our senses for the occurrence of that which it predicted. We in that case do not add to our information by quoting the general proposition, but we do add to the conclusiveness of the latter by widening through a fresh example the basis on which it stands. We have here stated the case of the *à posteriori* school. We must now proceed to point out the oversight which has given occasion for these objections to the Syllogism.

The Syllogism proves quite a different kind of conjunction to that which is patent to observation. "John is a sinner," as the conclusion of a syllogism in the first figure,

is quite distinct from "John is a sinner" as a perception. In neither of the premisses singly do we meet with the concatenation, "John—sinner." We have in them, "John—man," and "man—sinner," but "John—sinner" is a new concatenation, inferred from two immediate ones having a term in common; it is, in fact, "John (man) sinner," a mediate conjunction inferred from two immediate ones. It cannot be objected that "John" and "man" are synonymous, for "John" stands for a certain individual in the Category of Difference alone: "a man" for the same individual in the Category of Resemblance. In the concatenation "*homo (animal) vivens*," the mediate conjunction between "*homo*" and "*vivens*" is more obvious.

Let us point out, in the next place, that the syllogism in question reveals, not matter of fact conjunction, but necessary conjunction. If we see John sinning, we know by direct evidence that he is a sinner. And it would be most absurd to think that any evidence on the point could be superior to this. No other is so highly accredited in our courts of justice. It cannot be, then, that the function of this syllogism is rightly described when such trifling as the proof of a fact thus attested is attributed to it. This were indeed to prefer second-hand evidence to first-hand. Now, what the syllogism before us really does prove is necessary conjunction, that John *must* be a sinner, a truth which, in the event of some one denying the same, no observation is competent to establish. If any one, for example, were to declare that Miss Nightingale is no sinner, we know not how we could convince one of the contrary, otherwise than by showing that she must be a sinner, because all men are sinners.

In the next place, we have to point out, since universal propositions are cognizable, and not as merely general propositions are, by Conception only, that a conclusion drawn from a universal is based upon evidence different from, and superior to, the evidence which supports a purely general proposition. A particular instance deduced from a

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universal is based upon the evidence of Singular Induction, the root out of which the universal springs, and is a valid conclusion. A particular instance deduced from a merely general proposition is based upon inferior evidence, and is an invalid, or purely probable conclusion. We prove a necessary conjunction by Singular Induction. By universalization this becomes a universal proposition, from which we deduce, bring forth, any particular which it contains. From *these* particulars, by Induction, we infer a universal conclusion, then from this universal conclusion, instead of having occasion to be continually having recourse to Induction, we deduce *those* particulars. And in no case can we reason conclusively from particulars to particulars without the interpolation of a universal proposition, a proposition which includes in its extension every possible particular. How can we reason from isolated singular to isolated singular but by means of that which, *without an exception*, links them together? A merely general proposition does not so link them, and therefore does not warrant a perfect inference from these instances to those. When we conclude a universal proposition we do the same thing as if we tested each individual instance which it contains by Singular Induction. Whatsoever, therefore, is deduced from a universal is virtually proved by Singular Induction. The universal is the infallible register of this proof, and scientific deduction is an unfolding of the contents of this register. In this respect, Mr. J. S. Mill has afforded us a most complete and masterly exposition of the Syllogism. It is quite true that a universal proposition presupposes the proof of every single proposition of which it forms the summary. It cannot, therefore, without involving a *petitio principii*, be regarded as the *proof* of any particular which is deduced from it. Deduction is not proof. It is the evolution of the contents of a summary which, if it be a universal proposition, presupposes the demonstration of those contents by Singular Induction and Universalization.

We have now endeavoured to make known how Induction paves the way for Deduction; and if we have had occasion to abate the pretensions of the latter, we yet have had to challenge for the Syllogism a high place in logic. But we cannot discover that it is the type of all reasoning. We have, however, touched very briefly on Deductive logic, and for this obvious reason: its formal explication seems all but complete, and our course lies in a different direction. Seeing that Deduction has been developed prior to Induction, although the latter is prior to the former in the order of knowledge, what we have to explain is, how Deduction could be so forward at a period when that branch of logic which supplies it with its material, was enveloped in haze, when its existence, we may say, was all but problematical.

This obscurity attending the birth of Induction is accounted for by the fact, that the first stage of inductive reasoning is spontaneous. Induction has to pass through three stages, the spontaneous stage, the transitional stage, and the final stage. These we shall proceed to examine in the next chapter.

CHAPTER IV.

THE THREE STAGES OF INDUCTIVE REASONING EXAMINED.

THE FIRST OR SPONTANEOUS STAGE—Preponderance of Emotion in Early Times—Non-division of Knowledge in Early Times—No Universals Self-evident—The Preceding Views applied—THE TRANSITION STAGE—Incomplete Induction—THE FINAL STAGE.

THE FIRST OR SPONTANEOUS STAGE.—When the light of science began to dawn upon the world, it was necessarily through the most transparent objects, that it began to reveal itself to men enveloped with the dark and mysterious. And as when we begin to see, we are under the necessity of discerning the boldest outlines, and the brightest colours, in short, the most obvious features, and by their means of learning to detect fainter lines, and minuter shades; so the earliest searchers after knowledge must have learned to think by first having their faculties stimulated into action by the most simple and obvious. For men to arrive at the more complex sciences before they had acquired a considerable amount of skill, and discovered the indications of a method in the act of constructing the most elementary sciences, would be as much impossible as for a child to dance before it had learned to walk. We must learn the alphabet before we learn to read; we must lay the foundation before we can build thereon, are truisms so trite that we have to apologise for stating them. And yet they describe the only method of construction or synthesis, whether in nature, science, or art. And the reversal of this procedure is not

only contrary to experience, but to Reason. The dependent cannot precede the supporting. The compound cannot be prior to its constituent parts.

Preponderance of Emotion in Early Times.—Not only would it be impossible in itself to proceed from the higher departments of knowledge without previous training in easier pursuits, and the aid of previously acquired information ; but man's emotional condition, at a period when the intellect was only beginning to grope its way towards the distant light, would be such as to render any procedure of the kind one of insuperable difficulty. Man, at such a period, would be almost entirely under the dominion of his emotional nature. Consequently, any branch of knowledge in which the heart was likely to be strongly excited, biasing the intellect triumphantly to its side, had a small chance of legitimate development. Even at the present time, we know how prone the extremely ignorant are to be led into error by their feelings ; and how difficult it is for any man to receive the truth, whose propensities or whose sentiments have been cultivated in a direction hostile to its reception. Now, for the intellect, during the early period which we are contemplating, to attempt successfully to throw off the yoke of emotion, would be a hopeless task. The time had not yet arrived for it to assert its independency. Social development had not reached that stage which permits freedom of thought. When, however, objects to be investigated were of a kind little calculated to excite feeling ; and were also of that simple and obvious character, of which we have written above, there was uninterrupted freedom for intellectual activity. To this description, answer the attributes of space and number. Hence, geometry and arithmetic early entered upon a scientific stage, opening the way for the era at which we have now arrived, when intellect has won from feeling or emotion a great part of its rightful domain ; and when many sciences have dispensed with those ingenious hypotheses which frequently foreshadowed their approach.

Non-division of Knowledge in Early Times.—It is characteristic of the human mind, in its first efforts to pierce the darkness and mystery which envelop it, to embrace in one view the whole realm of knowledge, and necessarily to imagine that it is much more limited than it is. Thus, the astrologers of old little dreamed that the stars which were the objects of their superstitious contemplation were but a small portion of the infinite universe of worlds. The realm of knowledge enlarges in proportion as we divide it into separate parts, and subject each of these parts or their subdivisions to microscopic scrutiny. The more we discover distinctions which have been overlooked by previous searchers, and at the same time assign them their proper place in the Category of Resemblance, the more do we advance that branch of investigation upon which our efforts are bent. In the infancy of the world, science, poetry, history, morals, politics, religion, form one heterogeneous system, religion, however, exercising the ascendancy. Out of this medley, the sciences, as Comte was the first to discover, file out in the order of their simplicity and generality. And every department of knowledge receives its true advancement, when emerging in its due order out of the medley, it becomes isolated from every other department; but at the same time is made to fit the place designed for it in the great cyclopædia of learning.

We must now, however, call particular attention to the fact, that the intellect, when directed towards its first objects of study, had to be under no necessity of groping its way blindly and laboriously towards the light. Instinctively or spontaneously it saw its way for a certain distance, and only found itself at a loss when approaching objects more remote, obscure, and inaccessible, than those which first lay open to contemplation, its original light waned in the distance, and could not yet be increased. The intellect could then only regulate its proceedings by a method which, in so far as it was only partly developed, or ren-

dered explicit, was an unsafe guide; and which, in so far as it remained in the spontaneous or non-explicit stage, was not understood, and yielded no aid.

No Universals Self-Evident.—The method which first emerged out of the spontaneous stage was the deductive as usually understood. The cause of this is to be found in the fact, that the only knowledge obtainable at first was such as required the deductive method for its prosecution. Methods of intellectual inquiry are excogitated by investigating those objects which have become open to a scientific scrutiny. The mind, addressing itself necessarily at first to the easiest problems, discovers, by watching its procedure in such essays, how to act in the presence of more difficult problems, instead, as in the outset it must have done, of having to trust wholly to its spontaneous efforts. As the study of objects demanding the deductive method for their investigation brought to light that method, so the study of objects demanding the inductive method for their investigation also brings to light that method. There is no possibility of discovering laws of intellectual research apart from efforts made by the mind to overcome the ignorance which oppresses it, and excites its craving for knowledge. But deduction, as we have seen, presupposes the possession by the mind of universal truths or first principles which cannot themselves be deduced from prior universals. These, in the infancy of knowledge, were the contribution of spontaneous Induction. The axioms and definitions of geometry, and the laws of number, were about the first universal truths, which, because of their simplicity, and also because of their remote connexion with emotion of any kind, were established by the agency of spontaneous induction. It is usual to call these self-evident. But we can discover no proof of the truth of this theory. Indeed, it seems to us, that the only argument capable of being held in its favour is a negative one: the failure of the *à posteriori* philosophers to account in a satisfactory manner for the origin of first principles. Either there are

truths which are independent of experience, or there are not. We can only prove that there are, by failing to prove that there are not. But, if we fail to prove that a distant figure is a man, must it, therefore, be a woman, supposing it certain that it must be one or the other? By no means. There is still as great a likelihood of its being a man, as of its being a woman. Yet this is the kind of argument that is had recourse to in order to establish the *à priori* theory of ideas. A theory resting, thus, on no intrinsic evidence in its favour, but entirely on the ill success of philosophers to prove the contrary alternative, can have no certain foundation, cannot be very formidable to encounter, and is liable at any moment to be overthrown.

The only self-evident truths which we have been able to discover are those which Perception and Conception make known to us. All others are known through the medium of prior knowledge, and, consequently, are not self-evident, are not intuitively apprehended. We acquire the first principles of geometry in the same manner as we do all other first principles. We can discover but one method of acquiring the primary universals of any branch of knowledge whatever, subjective or objective; moral, social, physical or metaphysical. But this method, in its primary stage, is, as we have already remarked, purely spontaneous. Men become possessed of first principles, but do not know how, and, therefore, call them self-evident. Mr. Morell graphically describes the spontaneous stage in these words:—"The life of men who are thus conversant about phenomena only we term *spontaneous*. Their mind, stimulated by the external world, exercises its faculties without being *reflectively* conscious of a single mental operation; impressions and ideas exist, but it is never asked how or why they exist; mental operations are carried on, but it is never surmised in what manner they are carried on; knowledge is gained, but no inquiry is raised about the grounds or certainty of it; thought, in a word, goes forth, but it never returns to render

account of itself, or to inquire how it has been produced, or how far it is of any value, as being an accurate reflection of the truth of things *as they are*.”*

But although the primary universals of the elementary sciences were spontaneously apprehended, it is quite evident that they can have their necessity and universality tested according to the formulæ of Induction, when such formulæ have been ascertained. Thus the axiom:—Two straight lines cannot enclose space, follows necessarily from the following induction in the formula for necessary conjunction in explicative reasoning:†—

Inability to enclose space is a characteristic of these two straight lines:

The non-existence of that inability is attended with the non-existence of the same straight lines; therefore

Inability to enclose space is a necessary characteristic of these two straight lines.

Wherefore, by Universalization,

Two straight lines cannot enclose space.

All the spontaneous inductive inferences of common life, in so far as they are deemed necessary and universal, can have their cogency tested in a similar manner. It is by spontaneous Induction we know from early childhood that all fire burns, that all ice chills, and that the sun is the cause of day. We know, for example, that all fire burns by a spontaneous induction in the formula of cause and effect in ampliative reasoning, thus:—

Before I touch the fire I am not burnt:

When I touch the fire I am burnt; therefore

The fire is the cause of my being burnt.

Wherefore, by Universalization,

All fire burns.

Owing to the simplicity of geometrical data, and the

* ‘History of Modern Philosophy.’ Second Edition. Vol. i, p. 3.

† See Formulæ, p. 87.

vividness with which they are pictured in the imagination, we can arrive at true notions respecting them without actual trial by means of external observation. We can do so by merely thinking of them, by "imaginary looking." This has led some to surmise that such notions are not derived from experience (Perception) through the senses, but are intuitively apprehended by, what has been styled, the Noetic faculty, or Intelligence proper. We believe that Mr. J. S. Mill has effectually confuted this opinion by showing that, "one of the characteristic properties of geometrical forms is their capacity of being painted in the imagination with a distinctness equal to reality. . . . This, in the first place, enables us to make (at least with a little practice) mental pictures of all possible combination of lines and angles, which resemble the realities quite as well as any which we could make on paper; and in the next place, makes those pictures just as fit subjects of geometrical experimentation as the realities themselves; inasmuch as pictures, if sufficiently accurate, exhibit of course all the properties which would be manifested by the realities at one given instant, and on simple inspection: and in geometry we are concerned only with such properties, and not with that which pictures could not exhibit, the mutual action of bodies one upon another." * This is an adequate explanation of the sufficiency of "imaginary looking" in geometry; and it clearly points to Perception through the senses as the origin of the axioms and definitions of that science. Even if it were not their origin, we can detect no other method of arriving at first principles than through Perception, internal, if not external, in the first place; and through Conception and Reason in the second place.

The Preceding Views Applied.—In order to test the system shadowed forth in these pages, let us examine the opinion, that the axioms and definitions of Geometry

* 'System of Logic,' vol. i, p. 261.

are *à priori* truths. According to this view, the points, lines, angles, and figures of geometry, are not to be found in nature, and cannot be produced so as to satisfy the rigour of their definitions; they are, therefore independent of experience. A point in nature has magnitude: a geometrical point has not. A line in nature has breadth: a geometrical line has not. You can form no line which is perfectly straight; no circle whose radii are all exactly equal: the geometrical straight line and circle are perfect. Now, we do not dispute what is here said about the perfection of geometrical forms. We believe that the definitions of geometry are not truths *with* an exception expanded by hypothesis, for the sake of convenience, into truths *without* an exception. We believe that they are strictly necessary and universal in their character. But we cannot see, that on account of their perfection, they have not their root in our external experience, or out-ward Perception. Say, for the sake of argument, that they are not derived from this source, still they are known in the first place, are they not?, by Perception, and Perception is a bi-une fact, containing a cognition and an object. Let the perception be—1, the cognition; 2, of a straight line. Now, the object in such a perception is quite distinct from the cognition, where then does the object reside? In the mind? Nay, that is the seat of the cognition. In the interior organism? But what straight lines, we should like to know, since sight and touch afford no aid in this region, does a child apprehend in his interior organism? Then they must be originally perceived in external nature. Put a boy to write in a copy book, and tell him that he must keep the lines, then he has a most vivid apprehension of straightness. We conclude, therefore, that our first knowledge of geometrical forms is derived from external experience. The *à priori* philosopher admits that objective experience is the *occasion* of our cognizing these forms, but insists on the ground that no external forms can be produced to

satisfy the rigour of their definitions, that such definitions must have their *origin* in the Noetic region of the mind. "The cause of any idea," says Mr. Morell, "is the inward faculty from which it *immediately* takes its rise; and this is in the proper, and in the only proper sense, its true origin. But man, we know is a unity; the different powers and faculties of his mind all co-exist in one subject, and develop themselves simultaneously, working and inter-working together throughout all their operations. It so happens, therefore, that the action of one faculty often depends upon another, and only comes into play when thus stimulated. Hence the ideas which owe their origin, properly so called, to one of these faculties, may owe their occasion to another; in which case great care is requisite to separate that faculty which gives rise to them *directly*, from those which have to do only indirectly with their production. Thus, to give an example, we should attribute the abstract conception of space *directly* to the operation of our reason; while yet we regard sensation, or an actual contact with the material world, as absolutely necessary in order to incite the rational faculty to the formation of such a conception."* Does not Mr. J. S. Mill himself afford sufficient grounds for the adoption of the opinion that the first principles of geometry are truths which are independent of experience? He holds that there are no lines without breadth, nor perfectly straight; no circles with their radii exactly equal; no squares with all their angles perfectly right; and that when, for instance, we define a line as length without breadth, we call in the aid of hypothesis, and suppose, for the sake of convenience, that it has no breadth, while in reality there is no such line. The *à priori* philosopher, on the other hand, contends that the definition in question is strictly necessary and universal; that there is no hypothesis about it; that in

* 'History of Modern Philosophy.' Second Edition. Vol. i, p. 109.

external nature, however, it is as Mr. Mill says, there is *no* line without breadth; and that, consequently, the definition cannot be derived from experience, but from a source which greatly transcends it.

Now, we doubt whether either the *à posteriori* or the *à priori* philosopher be right in asserting that there are no external forms answering to their definitions. The position of the former is:—There are no forms in nature which satisfy the rigour of their definitions, therefore, such definitions are merely hypotheses with truth for their basis. The position of the latter is:—There are no forms in external nature answering completely to their definitions, therefore, such definitions are *à priori* truths, truths independent of experience. Now, if we can discover external forms exhibiting the perfection of their ideals, it will be seen that both philosophers misstate facts, and arrive in consequence at erroneous conclusions. The one, from the cause mentioned above, concludes that geometrical data are hypotheses: the other from the same cause, that they are self-evident truths. Are they right as to the facts of the case? Let us endeavour to see.

It is evident that a geometrical line is continually met with in the external world. "A line," says, Sir William Hamilton, "is nothing but the negation of each other by two intersecting colours. Absolutely considered, it is nothing; and so far from there being any difficulty in conceiving a breadthless line, a line is, in fact, not a line but a narrow surface between two lines, if thought as possessed of breadth,"* The extremity of such a line is a geometrical point; and although we cannot produce a line which is perfectly straight, we must perceive that the shortest distance between two points must be such a line. It seems, therefore, from these instances, that it is not so much the existence in external nature of forms answering to the definitions which can be doubted, *as our power of constructing those forms, in*

* Hamilton's Edition of 'Reid's Works,' p. 859, Note.

strict conformity with their ideals. We cannot mark out two miles of absolutely equal length. But we cannot avoid perceiving that the halves, quarters, and eighths of a block of granite must be respectively equal to each other; and that such divisions of the block potentially exist. If, therefore, things answering to the definitions have an external existence, it is neither correct to say that the latter are hypotheses founded on truth, nor to say that they are truths independent of experience. Seeing that the definitions have their prototypes in the outward world, and their origin, first, in Perception, and, secondly, in Conception and Reason, neither of these declarations can be accepted as true.

The way in which we arrive at the definitions of geometry seems to be this:—When, for example, we construct a circle with all possible care, it still has, as an inseparable accident, some amount of imperfection. We, however, rarely attend to this fact, because the withdrawal of attention from it does not involve our unconsciousness of the Whole to which it belongs. But we do concentrate all our attention upon the essential properties of the circle, and cannot withdraw it from these without becoming unconscious of the circle. Why is there this difference between the two kinds of properties? When we construct a circle, and submit it to the scrutiny of Reason, it is discovered by Singular Induction—operating spontaneously in this case, because of the simplicity of the object, and because of its capacity of being pictured in the imagination with such peculiar vividness—that certain properties are necessary to its existence, and consequently, cannot be abstracted, without the annihilation of the Whole to which they belong. Whereas, it is discovered that the imperfection mentioned above is merely an inseparable accident, which, consequently, admits of being overlooked in our perception of the circle, and in thought is wholly incompatible with the notion of that figure. For we have no alternative but to think of a circle as perfect, that is,

circular, or as imperfect, that is, not circular. Now, the definition is framed to include the necessary properties alone of an object; and there is no hypothesis concerned in such a procedure. But when we *construct* a circle, hypothesis does come into operation, for we then *suppose*—and as shown above, are allowed by the laws of thought to do so—that the circle rigidly complies with the definition. In other words, the inseparable accident which mars its perfection is conveniently lost sight of, and the external form is invested with all the completeness of its ideal.

THE TRANSITION STAGE OF INDUCTION.—This stage, we are inclined to think, is that in which the sciences are divided into the Exact sciences and the Inexact. In the first division, truths are said to be necessary; and in the second, contingent. The former have also been styled the deductive sciences, the latter the inductive. The deductive sciences are thought to rest on truths which are independent of experience. The inductive sciences are thought to consist mainly of generalizations from experience. In this stage, we hear much from the extreme *à posteriori* school of the necessity of wide inductions, and of avoiding hasty generalizations. Great stress is laid on the laws of nature, namely, invariable uniformities of coexistence and sequence. Man is denied a knowledge of causes. Universals are pronounced to be above his apprehension. ‘His place is simply to investigate the phenomena of nature, and to classify them. When this is done, science is as complete as it is in the power of man to make it. The human mind is limited. We know nothing but phenomena. Noumena are beyond our ken. Let us know our ignorance, for that is useful knowledge. It will abate our pride, teach us what we can really know, and induce us to limit our researches to that alone.

“Wisdom is oftentimes nearer when we stoop,
Than when we soar.”

In this scheme, Reason has no place. Perception and

Conception are the exclusive source of knowledge. The Syllogism is pronounced to be a cumbersome invention, having no exemplar in thought, and henceforth to be regarded as a mere relic of the profitless ingenuity of bygone philosophers.

This extravagant procedure provokes reaction. Reason reasserts its sway. The Syllogism is pronounced by the opposite school to be the type of all reasoning. Induction, in so far as it is a process of inference, can be exhibited in the syllogistic form. And although the major premiss of such a syllogism is suggested by experience, it has a character of necessity and universality with which no experience can provide it. One of the chief characteristics of the transitional stage, therefore, is this contest between the two rival schools of logic. Now, the method of Bacon is on the ascendancy: now, that of Aristotle.

Incomplete Induction.—In opposition to the followers of Aristotle, but without having occasion to agree with the *à posteriori* school, we have been constrained to come to the conclusion, that all sciences derive their first principles from Induction, some spontaneously, others explicitly; and that Deduction afterwards, by the help of these principles, arrives at truths of a grander and more complex aspect. But now it may be asked, how are first principles established in the transition stage, when they are not possessed spontaneously, and yet are not consciously arrived at in strict accordance with the rules of Induction? The right answer to this question seems to be the following.

Laws of the most obvious sort are established by an incomplete method of induction, because they are such as to satisfy the rigour of the complete method, were it known what that is. A necessary conjunction, being virtually universal, can never have an exception. It must constantly be exhibiting itself in never-broken uniformity to the notice of men; and they are, con-

sequently, impressed with the notion of a law. Laws thus established have also borne the weight of the system which has been built upon them, and, which is a strong confirmation of their reality, have not given way; while many deductions made from supposed laws have revealed the erroneousness of such laws, and made obvious the necessity of further and more exact investigation. The synthesis has proved the previous analysis to be defective.* Sometimes, too, laws of nature have been established in strict accordance with the rules of Induction, but the investigator has not detected the law in the single instance before him. He has picked up an ingot of gold, but has failed to discover that the region abounds with the precious metal.

Seeing what imposing results have been achieved by a partly developed method, it is fairly open to question whether such a method be not quite adequate to the demands usually made upon it. In that which has been its special field of labour, Induction in this stage has done its work well. Physical science, physical well-being, these were its chief aims, and these have been attained in a degree that is truly astonishing. But after these in time, though before these in dignity and importance, come social and moral questions of an all-engrossing, and even sacred, character. These are the questions, forming as they do in their recent growth the incentives which urge original minds to excogitate new truths, that necessitate a fresh contribution to the laws of scientific research. These are the questions, which, because of their intimate connexion with the emotional nature of man; because of their ele-

* But it must be borne in mind that the synthesis in this case, namely, Deduction, carries our knowledge to a far more complex stage than it was in, when first submitted to analysis. Induction by an analytical procedure provides us with the axioms and definitions of geometry, but Deduction yields the imposing results which follow from these.

vated and complex character; and which, because of the prejudice and self-interested opposition which they have to encounter, demand a more stringent method than suffices for the advancement of physical science. And these are the questions which more especially give prominence to the wisdom of that aphorism of Bacon, which says, that "The real cause and root of almost all the evils in science is this: that falsely magnifying and extolling the powers of the mind,* we seek not its real helps."

THE FINAL STAGE OF INDUCTIVE REASONING.—On this stage we shall make very few remarks, for the whole of this inquiry may be considered a contribution, although it must be confessed, an insufficient contribution, to it. Here we shall content ourselves with merely repeating, that we have come to the conclusion that, whether in physics, or metaphysics; natural philosophy, or moral philosophy; there is but *one* method of scientific research; that the basis of this method is Induction; that Induction in its spontaneous stage has sufficed for all the requirements of the mathematical sciences, and, in its transitional stage, for those of the physical sciences. The social and moral sciences, however, demand for their establishment all the *help* to be derived from a completely formal development of the laws of Induction. And as a deeply felt necessity for physical advancement called forth a corresponding growth of inductive logic, so it is to be anticipated, that the present demand for social and moral progress, will in like manner elicit, without fail, a corresponding development of the same important organon.

* Private judgment?

CHAPTER V.

OF THE ORIGIN AND GROWTH OF KNOWLEDGE.

How does Knowledge originate?—Birth of Knowledge Spontaneous—
Order in which Knowledge Grows—Knowledge Grows by Conflict.

How does Knowledge Originate?—In the preceding chapters we have endeavoured to make known how scientific truth is perfected, but lest we should be thought to be attaching too much importance to the finishing processes of thought, we shall here endeavour just to insinuate how truth originates and grows. Before knowledge is fixed upon a perennial basis, it has its dawn in some distant cloud-land. It must grow by degrees into the light of perfect day. How, then, does knowledge originate? The practical logician is but the finisher of the work which has been prepared for him. By what instrumentality has the work been brought to a state in which he can operate upon it? He is the gold-refiner. The gold-digger must belong to a different class of workers.

Birth of Knowledge Spontaneous.—Knowledge, we believe, must, in the first instance, arise spontaneously out of, as it were, the fermentation of those impressions which are caused by new circumstances. The consequents of one era become the antecedents of the next. But hitherto in the world's history there has frequently been a retrogression from the consequent to the antecedent state, probably from want of sufficient vitality in the state from which the consequent sprang; or because, like a deductive system which fails to gain acceptance, it had an insufficient foundation.

Order in which Knowledge Grows.—The growth of ideas

is in the order of the three originating faculties, Perception, Conception, and Reason. According to this order, Perception preponderates, in the first place, over the other two faculties. In this stage there is little abstraction exercised; there is, consequently, a dearth of general ideas; and such as exist are founded upon entirely superficial resemblances. Events are described with minute and tedious circumstantiality; as is still the case when the untaught have to narrate an event which they have witnessed.

In the next stage, Conception becomes more active, detects resemblances among phenomena, reduces objects into classes, and also scrutinises the general notions which result from the spontaneous thinking of men. Laws of nature are discovered, the most obvious first, and the less obvious laws after considerable inductive skill has been acquired. This discovery of laws is with some philosophers the limit of human research. Other philosophers, however, do not rest satisfied till these laws or uniformities can be accounted for, till they can be proved either to be primary, or to be dependent or prior laws. These philosophers assert the authority of Reason, and very rightly deny the claims of Conception to the throne of knowledge. Dr. Whewell, whose authority on a point pertaining to the History of Inductive Philosophy cannot, we presume, be surpassed, says, that "inductive truths are of two kinds, laws of phenomena, and theories of causes. It is necessary to begin in every science with the laws of phenomena; but it is impossible that we should be satisfied to stop short of a theory of causes." This corroborates the view which we have taken of the subject. Conception, according to the second rule of Induction, realizes the *prima facie* evidence of a law. Reason proves this law to be necessary and universal; and also proves that it is either dependent on a prior law, or is itself primary.

But although, as we have shown above, a certain era is marked by the activity of this faculty rather than of that, it

must not be forgotten that all the faculties manifest, in regard to undecided points, a spontaneous, or transitional energy, which greatly influences the most advanced thinking of that era. The spontaneous and transitional thoughts of a period, whether in religion, politics, or science, serve as so many checks against presumed finality and narrowness of view. The grandest truths are the last to enter their final stage; whereas truths inferior enter that stage at a comparatively early period. Now, some persons pronounce that discovery terminates with truths of the latter kind. A sensational philosopher is too ready to do this; and to boast of his accepting nothing till it shall be proved. But when positive knowledge is so scant, by so doing, he throws a thick mist of negation upon all that makes man's life full and joyous. The antidote to this narrow philosophy—a philosophy which endeavours to impose upon mankind a gaunt skeleton of truth, in room of the lovely Divinity herself—is *that portion of a nation's thought which has not yet entered upon its final stage; and which, by loudly asserting its superiority, deters inquirers from limiting the domain of knowledge, as in vision, space is limited by the limitation of the sense of sight.* “Thousand to one, says Lessing, the goal of your philosophy will be the spot where you become weary of thinking any further—a remark which should caution us not to be too hasty in interdicting any branch of investigation as transcending our faculties, and not to fix the boundaries of demonstrative knowledge without *very* sufficient grounds.”* Our better nature will inevitably—

“ Urge us on,
With unremitting labour to pursue
Those sacred stores that wait the *ripening* soul,
In Truth's exhaustless bosom.”

Knowledge Grows by Conflict.—A new idea having ori-

* Morell's 'History of Modern Philosophy.' Second Edition. Vol. i, p. 13.

ginated spontaneously in an original or pioneering mind, from the impressions produced upon that mind by a new state of things, is, nevertheless, tinged with the bright colours of enthusiasm, or idealized by imagination, and eked out by hypothesis. When such an idea is published it provokes criticism. A controversy ensues which fosters the growth of the new idea. Truth consequently is elicited to a great extent by conflict between those who believe too much, and those who grant too little, namely, the theorizing minds and the critical.

Sometimes a branch of knowledge has two or more divisions. Each of these divisions, owing to the limitation of the human mind, is investigated by separate persons of different disposition and culture. The enthusiasm consequent upon extreme devotion to any one branch of inquiry leads to an exaggerated estimate of its importance by the cultivator. Thus, the philosopher of the Positive School is blind to the merit of an *à priori* philosophy. The philosopher of the Kantian School, on the other hand, allows no merit to a system of pure sensationalism. Bacon, but more especially his followers, in the fervour of inductive research, cast a slight upon deductive logic. The followers of Aristotle take umbrage at this, and in their devotion to the Syllogism exalt it into the type of all reasoning. The persistence of the struggle between these rival schools, without decided advantage gained on either side, has the effect of kindling a new idea, namely, that there must be truth on both sides. This idea calls into being the eclectic school, who, out of the rival systems, each of which hitherto has aimed at universal dominion, by the overthrow of the rest, endeavour to form a new system of philosophy. When inquiry has come to this stage, then it is that the finishers have their task to accomplish; which is, to contribute to the completion of the great work in which their precursors, one after another, have been so long and ardently engaged.

CHAPTER VI.

THE VERACITY OF CONSCIOUSNESS.

Two Kinds of Certainty—Reflective Doubt Examined—Views of Sir Wm. Hamilton and other Philosophers on this Point—Veracity of Consciousness, How Established.

Two Kinds of Certainty.—There are two views to be taken of this very important subject. The one, as having already fallen virtually under notice throughout this inquiry, we shall here merely glance at. It is this:—A matter of fact conjunction is accepted on the evidence of Perception; a general conjunction on the evidence of Conception; a necessary or a contingent conjunction on the evidence of Singular Induction; a universal conjunction on the evidence of Singular Induction and Conception acting in concert. Now, if these faculties are not fully assured of the existence, or mode of existence of their respective objects, such a state is called doubt. When they are fully assured, and their deliverances are carefully tested, in the same manner as accounts are tested by competent auditors, we have all the certainty that these faculties, in their direct, or transitive operations, ever demand. But, although we have this kind of certainty, it is still competent for the mind to inquire how far the faculties in question, in this their direct operation, are to be depended upon. This last is a reflective procedure: the former is a direct one. Reflective or speculative doubt is compatible with direct conviction. When the faculties in their transitive working are in an assured condition, it is still possible that there should be a reflective uncertainty as to their truthfulness.

Having thus drawn attention to the distinction which exists between direct and reflective doubt, we must now proceed to examine the latter more at length.

Reflective Doubt Examined.—It seems that this species of doubt is confined to Reason alone. Perception and Conception appear to make no reflex inquiry concerning the certainty of their own deliverances. Were they to institute such an inquiry, what could Perception do but repeat itself? What could Conception do, but the same thing? And how could this vindicate their veracity? Indeed, so intense is their *asserting force* (24) when they have a clear apprehension of their respective objects, that we cannot see how such a reflective scrutiny of themselves would be possible. It is only when it has not its appropriate evidence supplied, that even Reason itself is reflectively dubious of the integrity of consciousness. When Reason does possess all the evidence which it requires, the same is true of it as was said of the other faculties—its asserting force is *so* great, that we cannot believe it possible that it should question its own veracity. The craving of Reason for its appropriate evidence is, therefore, as it appears to us, the source of all modern philosophical scepticism. Until this evidence shall be supplied, we must follow one of two courses, we must either believe in the veracity of consciousness with the dogmatist, or speculatively question it with the sceptic. *And now, is consciousness when supplied with satisfactory evidence veracious?*

Views of Sir Wm. Hamilton and other philosophers on this subject.—In order to obtain a clue to the answer to the preceding question, we cannot, we think, do better than discuss the contributions left us on this point by the late Sir William Hamilton. This able philosopher holds that we cannot doubt the actuality of a fact of consciousness, without committing a suicidal act. "For as doubt is itself only a manifestation of consciousness, it is impossible to doubt, that what consciousness manifests, it does manifest, without in thus doubting,

doubting that we actually doubt ; that is, without the doubt contradicting, and therefore annihilating itself.”* On this reasoning he founds the conclusion, that the data or deliverances of consciousness, considered simply in themselves, as apprehended facts or actual manifestations, are above all scepticism. When, however, we pass from this subjective sphere to the objective—from the fact of consciousness to the deliverances of the same, from the existence of the witness to his testimony—then doubt, we are told, does not involve self-contradiction, and is to be repelled by an enlightened appeal to Common Sense alone.

Now, in opposition to this view, we have come to the conclusion, with Reid and Stewart, to use the words of the latter, “that the belief which accompanies consciousness, as to the present existence of its appropriate phenomena, rests on no foundation more solid than our belief of the existence of external objects.”† This view, these two philosophers supported on common sense principles, namely, the thorough reasonableness of trusting our primary beliefs, and the extreme folly of distrusting them, seeing that practically we have no option but to accept them as true. Believing that a great portion of our knowledge is primary, and, therefore, superior to any derivative knowledge in certainty, they judged that all that could be done to enforce the acceptance of a fundamental belief was a reiterated protest against the wickedness or the insanity of calling it into question. They set up dogmatism against the prevailing idealism and scepticism of the period. They are to be admired for their faith in the trustworthiness of consciousness. Their faith was a forecast of coming knowledge ; an illustration of what we remarked above, namely, that that portion of a nation’s thought which has not yet entered upon its final stage, by loudly asserting its just claims to acceptance, and by loudly maintaining its superiority, deters inquirers from limiting the

* Hamilton’s Edition of ‘Reid’s Works,’ p. 744.

† ‘Philosophical Essays,’ pp. 6, 7.

domain of positive knowledge within the narrow circle of their own mental vision.

Much, however, as we admire the Scotch School for the healthy tone of thought which they strove to encourage, we cannot look upon their teachings as having advanced beyond the transitional stage. They believed that all first principles were self-evident truths, deliverances of Common Sense; and that, as original beliefs, they were paramount in certainty to any derivative assurance. In this inquiry we have been constrained to adopt a contrary conclusion. First principles are herein stated to be universalizations from necessary conjunctions proved by Singular Induction. But of this we have said enough in the preceding pages. We must now proceed to point out another mark of the merely provisional character of Reid's system.

Reid, in his criticism of Hume, attempts to convict that philosopher of inconsistency in being only half a sceptic. He believed that reflective doubt involved direct doubt, or rather, he did not perceive any distinction between the two. He thought that if a man doubted whether consciousness afforded us an exact knowledge of the external world as it is in reality, he ought also to doubt the existence of his impressions and ideas. And he evidently intends his words to imply, that Hume could not really believe in his own sceptical tenets, because "he every now and then relapsed into the faith of the vulgar, and could hardly for half a dozen pages, keep up the sceptical character;" and because he never heard him "charged with doing any thing, even in solitude, that argued such a degree of scepticism as his principles maintain." Reid's pattern of a consistent sceptic is Pyrrho the Elean, of whom it is reported that, "if a cart ran against him, or a dog attacked him, or if he came upon a precipice, he would not stir a foot to avoid the danger, giving no credit to his senses."* Such scepticism as this is

* Hamilton's Edition of 'Reid's Works,' p. 102.

downright insanity. Now, Hume could be a real speculative doubter, without being a practical one. He believed that if he put his hand in the fire it would be burnt, but at the same time could feel unconvinced that the world as *known*, is one with the world as *existing*. He possessed the same practical assurance of the world's reality as Reid himself did, but could not overlook the defects of the Representationist theory of external perception, and seemingly escaped the error, into which Reid fell, of confounding practical doubt with reflective.*

Sir Wm. Hamilton occupies the place of mediator between Hume and Reid, but on grounds dissimilar to those which we have adopted—ours being the distinction between practical and speculative doubt. He defends Hume against the charge of inconsistency in being only half a sceptic, by marking out the difference which, as shown above, there is between a fact of consciousness and what consciousness testifies as to external objects. "There is no scepticism possible," he says, "touching the facts of consciousness in themselves. We cannot doubt that the phenomena of consciousness are real, in so far as we are conscious of them. I cannot doubt, for example, that I am actually conscious of a

* "Nature," says Hume, "is always too strong for principle. And though a Pyrrhonian may throw himself or others into a momentary amazement and confusion by his profound reasonings; the first and most trivial event in life will put to flight all his doubts and scruples, and leave him the same in every point and speculation with the philosophers of every other sect, or with those who never concerned themselves in any philosophical researches. When he awakes from his dream, he will be the first to join in the laugh against himself, and to confess, that all his objections are mere amusements, and can have no other tendency than to show the whimsical condition of mankind, who must act, reason, and believe; though they are not able, by their most diligent inquiry, to satisfy themselves concerning the foundation of these operations, or to remove the objections, which may be raised against them."—*Hume's Essays. An Inquiry concerning Human Understanding*. Part 1st, Section xii.

certain feeling of fragrance, of certain perceptions of colour, figure, &c., when I see and smell a rose. Of the reality of these, as experienced, I cannot doubt, because they are facts of consciousness; and of consciousness I cannot doubt, because such doubt being itself an act of consciousness, would contradict, and, consequently, annihilate itself. But of all beyond the mere phenomena of which we are conscious, we may—without fear of self-contradiction at least—doubt. I may, for instance, doubt whether the rose I see and smell has any existence beyond a phenomenal existence in my consciousness. I cannot doubt that I am conscious of it *as* something different from self, but whether it have, indeed, any reality beyond my mind—whether the *not-self* be not in truth only *self*—that I may philosophically question.”* Consciousness is here shown to be far beyond the reach of doubt as regards its actual manifestations—as regards its own existence as a witness—by a *reasoning* which proves that to doubt the phenomena of consciousness is a suicidal act. Sir William Hamilton elsewhere shows that “the *cogito ergo sum* of Descartes is a valid assertion, that in so far as we are conscious of certain modes of existence, in so far we possess an absolute certainty, that we really exist;” for to doubt that we exist is to doubt the existence of the doubter, a self-annihilating act. To strengthen this view he quotes the following passage from Cousin’s Lectures on the Scottish School. “It is not,” (Cousin observes . . .) “as a fact attested by consciousness, that Descartes declares his personal existence beyond a doubt; it is because the negation of this fact would involve a contradiction.” And after quoting the relative passage from Descartes:—“It is thus by a reasoning that Descartes establishes the existence of the thinking subject; if he admit this existence, it is not, because it is guaranteed by consciousness; it is for this reason, that when he thinks—let him deceive him-

* Hamilton’s Edition of ‘Reid’s Works,’ p. 129, Note.

self or not—he exists in so far as he thinks.”* The authority of primary belief is here superseded by that of a derivative assurance. The final appeal is not to Common Sense, but to a “reasoning.”

When, however, Sir Wm. Hamilton comes to consider consciousness in its objective aspect, as a revealer of facts external to the mind, he sides with Reid, he argues from common sense alone, and very ably and elaborately contends, that “as elements of our mental constitution—as the essential conditions of our knowledge,” our fundamental beliefs must by us be accepted as true. “To suppose their falsehood, is to suppose that we are created capable of intelligence, in order to be made the victims of delusion; that God is a deceiver, and the root of our nature a lie.” But of course the beliefs here so highly vindicated, are assumed to be those universal truths which we have endeavoured to prove are not self-evident, primary, or intuitive.

It is surprising to find how frequently philosophers have been within sight of new land, and yet have failed to see it. It seems strange, for example, that to a mind like Sir Wm. Hamilton’s, the thought did not occur, that “the reasoning,” on which was based the assurance that the actual manifestations of consciousness could not be doubted, admitted of being developed into a reasoning which proves, what Reid and Stewart felt to be fact, that the existence of the external world is not less certain than our own existence; which proves that the *testimony* of the witness, consciousness, is, to all intents, as correct, as the *existence* of the witness is beyond doubt. For, let us ask, what is the ground of the conviction, that a fact of consciousness cannot be doubted? A deliverance of consciousness, namely, a reasoning. Is this deliverance trustworthy? Reason, reflectively operating, waits for an answer; and Reason asks this question, because it craves for its appropriate evidence. Till this evidence

* Hamilton’s Edition of ‘Reid’s Works,’ pp. 744, 745.

shall be supplied, even Sir Wm. Hamilton's argument is not unassailable (132). It is only an answer to direct doubt. It leaves reflective doubt still in possession of the field. It allows the sceptic still to ask, do my faculties deceive me or do they not? Can a satisfactory answer be afforded to this question? Let us see.

Veracity of Consciousness, How Established?—If we question the veracity of a deliverance of consciousness, it behoves us to *ascertain by Induction* which is logically prior to the other, the veracity or the deliverance. We then discover that the veracity is presupposed by the deliverance. Veracity is inseparable from consciousness when the latter is possessed of direct or transitive assurance. No other attribute of consciousness underlies its veracity. That is primary. Would we *prove* this veracity? The attempted proof presupposes the veracity it would prove. Would we *disprove* this veracity? The attempted disproof presupposes the veracity it would disprove.* The foundation of all knowledge, knowledge of *self*, or knowledge of *not-self*, the primary principle presupposed alike by consciousness when revealing its own existence, or that of its objects, be the latter mental, organic, or extra-organic, in the man, or out of the man is—VERACITY. Consciousness, therefore, is indeed The Standard of Truth. May we hope that we have succeeded in some degree in pointing out how it possesses this momentous function; and that our labour will not be entirely in vain?

* Thus, in the Formula of Necessary Conjunction in Explicative Induction (87) we have:—

plus Veracity is *plus* proof:

minus Same veracity is *minus* same proof, therefore

plus Veracity is *plus* proof.

And again:—

plus Veracity is *plus* disproof, &c.

CHAPTER VII.

THE METHOD OF NATURE.

The Method Explained—Application of the Method—Tendency of the Dominant to Abuse its Authority—Conclusion.

The Method Explained.—The counter Wholes of Comprehension and Extension are not factitiously framed by the mind as instruments of orderly arrangement, but are instances of a law, which we have ventured to call the Method of Nature, a method of the greatest importance, and one to which we have had to allude more than once in this inquiry.

For the sake of illustration, we may call the system of nature a pyramid. In doing this we are not reasoning from analogy. We are merely supplying an inadequate, though convenient example of the method in question. At the base of this pyramid we have such attributes as the most general, the most simple, the most necessary, the most permanent, the independent (not depending on simple elements), the subservient, the inferior, the involuntary and restricted. At the apex, we have such attributes as the least general, the least simple, the least necessary, the least permanent, but at the same time, the free, the excellent, the dominant. The attributes which predominate at the one extreme are at a minimum at the other extreme. They bear an inverse proportion to each other, of which comprehension and extension, two of these attributes, are an example. Comprehension is at a maximum at the apex: at a minimum at the base.

The reverse is the case with extension. The greater, therefore, the comprehension, the less the extension, and *vice versa*. The general, the simple, the permanent, the independent, the restricted, at the base are contrasted, respectively, with the comprehensive, the complex, the changeful, the dependent, yet the free, the excellent, the dominant, at the apex.

Application of the Method.—The contemplation of the extremes of this method, and of their relations to each other leads to edifying results. For instance, the base is the most necessary, because it supports all that is above it. From this it appears, but it is superfluous to state it, how necessary it is to build a good foundation. The educator may learn from this fact that nothing can compensate in education for the absence of good grounding. The student may learn from it that if he would build high, he must beware of desultory efforts, and fix upon a single site upon which to lay a broad and solid foundation, and then build upon that the best superstructure which lies in his power. The ruler also may learn from it that the people must be well cared for, if the fabric of the state is to be made secure.

Again, to select another instance, from the fact that the base is the region of *restriction*, and the apex that of *freedom*, we learn that all that is a *sine qua non* of social order must be maintained by uncompromising force, by military force, if police force be not sufficient; but that in proportion as we advance from the fundamental conditions of order, in that proportion we advance from the region of *involuntarism* to that of *voluntarism*. Hence the hurtfulness of enactments which interfere with the liberty of the subject in matters which occupy a high place in the social pyramid.

From the fact that the apex of the pyramid is the free and dominant, we learn that it should rule all in so far as the well-being of the lower permits that

rule. For instance, the mariner, as long as due attention is paid to the conditions which keep her afloat, and enable her to plough the deep, governs the ship which carries him, and makes her obedient to his will. We learn also from this fact, to reverence truths, according to the stage which they occupy in the great pyramid of knowledge, for instance, to avoid the inconsistency of esteeming the "Science of Bell Ringing" so highly, as the science of acoustics; or the physical sciences so much, as those of a social and moral character. These are illustrations of the manner in which the method obtains. A general observance of this method as a law of construction must clearly tend to wide and steady improvement. A non-observance of it must as clearly tend to disintegrating and disastrous results. Were we to say that this method, to a large extent, is not already respected, we should be undoubtedly wrong. From the very first it unavoidably gained the spontaneous adhesion of mankind, and subsequently, has been more and more in favour, because it could not fail to recommend itself to the eye of that practical sagacity which springs from daily experience. But to say that it is uniformly adhered to, in the weightier matters of government, legislation, education, and truth-seeking, would be false, and would imply that it had obtained a full scientific recognition. Except in the case of Comte's highly original application of it to the co-ordination of the sciences—and even he has greatly reduced its proportions, and lowered its dignity by his purely sensational doctrine, and his denial to Psychology of a place among the sciences—we know of no such recognition. We hope that its importance will not be much longer overlooked.

In further and fuller illustration of the application of the method as a rule of construction, let us suppose that a poem—and poetry is not remarkable for method—had to be composed. Now, if we compare poetry and prose together, it is found that they have a resemblance which constitutes their

genus, their common part ; and that each is distinguished from the other by its characteristic attributes or *differentia*. Now, the common part forms the base of the pyramid, the *differentia* the superincumbent part. The fundamental attributes being the most necessary, because all the other attributes depend for existence upon them, must at least be adequate to the support of that which is superimposed. On the other hand, the characteristic properties being the superior and dominant in respect to the end aimed at, must, in the same way as the rider makes the horse carry him to his destination, have the supporting part subservient to their requirements. But in making the inferior thus subservient to the superior, due respect, as was illustrated by the mariner and his ship, must be had for the well-being of the former. If a rider intend to get much work out of his horse, he must treat him well, and not over-tax his strength. These may be tiresome truisms, but "we learn to do a thing in difficult circumstances by attending to the manner in which we have spontaneously done the same thing in easy ones."* Let us now suppose that in a poem the fundamental is sacrificed to the characteristic. Is this the best poetry? We should say not. It would be analogous to a house in which commodiousness had been sacrificed to elegance ; or to a chair, which though highly ornamented, was too weak for use. It would put us in mind of those architectural ornaments which usually lie about a stone-cutter's yard, ornaments which do not fulfil the end for which they are designed. We know, of course, that it will be urged, that art must be loved for its own sake, and not as a mere ornamental adjunct to the useful. Let it be so, yet even then, we presume, that a poem, in which the common or fundamental part, whatever that may be, is sacrificed to the characteristic part, is not a poem of the highest class ; else it might be said that he is the best man whose mind, without

* 'System of Logic.' J. S. MILL Vol. ii, p. 401.

being superior to that of the man who possesses the *mens sana in corpore sano*, has so preyed upon his body, that it has well nigh inflicted the separating cut.

Tendency of the Dominant to Abuse its Authority.—There is a striking tendency, in the earlier stages of knowledge and civilization, to despotism, to the undue preponderance of the superior and dominant over the inferior and subservient. Hence slavery and serfdom. Hence also the undue predominance of deductive reasoning in ancient times, and during the scholastic period. But, in course of time, the mind becomes more enlightened. Some inquirers are then led to assert the claims of the inferior, but most necessary, to higher consideration, and thus, cause reaction against the previous tyranny of the superior. This for a time brings the latter into unmerited disrepute. But better tyranny than anarchy. Better faith than a cold cheerless philosophy, a heartless negation, that limits existence to its own narrow circle. The superior, therefore, soon regains the ascendancy, for such is the Method of Nature, which teaches no Communism or Chartism, but yet the duty of extending to the inferior, but most necessary, that which is strictly its due; which affords no sanction to the elevation of sensationalism into the dominant system, but yet draws attention to those fundamental processes of thought—the working classes of the human mind—which have not as yet gained their due share of consideration, and which we, in this inquiry, have been endeavouring to place on their true footing.

Conclusion.—These contributions have a tendency to mediate between the rival schools of philosophy, and thus to produce unanimity where now there is conflict, and by this unanimity to further the advancement of the higher truths. They have therefore a tendency to rebuke one-sidedness, and the elevation of half-truths into whole truths. They seek to curb the extravagances of *private* judgment by an

appeal to the universal judgment of man, to consciousness as the Truth-Standard. And by supplying such a standard, they enable us to detect all departures from it whether in the sane or the insane mind. They award to sensational truths the honour of being in a more advanced stage of development than rational truths, those apprehended by Reason. But they claim for these last a decided superiority in rank, and account for their less forward growth by the law, that the simple and general is prior in scientific development to the comprehensive and superior. They uphold the full authority of the dominant, yet vindicate the claims of the subservient to all due consideration, that is, to immunity from that hurtful ascendancy, hurtful even to itself, which the dominant has too frequently exercised over that which is absolutely necessary to the very existence of the dominant.

